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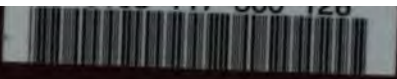
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**ANNALS  
OF  
ARCHAEOLOGY  
AND  
ANTHROPOLOGY**

ISSUED BY THE  
**INSTITUTE OF ARCHAEOLOGY**

EDITED BY  
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## SOME NOTES ON HOMERIC ARMOUR

By MAURICE S. THOMPSON, B.A.

In a previous paper\* I endeavoured to show that the Homeric Catalogue gave an accurate representation of the geographical and political conditions at the end of the Mycenaean age. Such a view would be seriously invalidated if it could be proved that the armour described by Homer was definitely of a much later date, although there is no objection to what may be termed the geographical standpoint being somewhat earlier than the description of life given in the Epic. I intend, therefore, now to take the features in Homeric armour which have been often used to differentiate it almost entirely from that of the Mycenaean age, and see at what date they first appear. It will, I think, be seen that all are to be found in that late phase of Mycenaean art which Dr. Mackenzie† has termed 'Achaean.' To this phase he attributes the Warrior Vase from Mycenae and other analogous vases on which figures of human beings and animals are represented. The novelty of his view lies not so much in the date attributed to the Warrior Vase, nor in the application of the term 'Achaean' to it,‡ but in the theory that this style of vase painting in no way foreshadows the subsequent geometric style. Since the Warrior Vase and the class of pottery to which it belongs will frequently be referred to in the following pages a few details as to its provenance and also a few notes on other similar sherds may be found convenient. For a fuller account I must refer the reader to Dr. Mackenzie's paper. The idea that the Warrior Vase was found with or near 'geometric' sherds is apparently erroneous, and Tsountas points out that the vase in question was found at a depth of five metres, while the only 'geometric' sherd noticed by Schliemann was two metres below the surface.§ The closest parallel to the figures on this vase are the warriors on the well-known painted stele from the same site. This was found in a late Mycenaean tomb, not *in situ*, but used to block up the entrance to another tomb hewn in the side. It belongs,

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\* *Liverpool Annals*, IV, p. 128.

† *B.S.A.*, XIII, pp. 423 ff.

‡ Ridgeway, *Early Age of Greece*, pp. 299.

§ *Rev. Arch.*, 1896, pp. 19 ff.; cf. 'Εφ. 'Αρχ., 1896, p. 14.



therefore, to the Mycenaean age, although to a late period in it.† Great emphasis is, however, often laid on its late date, and the fact is frequently emphasized that it is an old carved stele, plastered and painted over; with the apparent implication that the painting is not Mycenaean at all. In point of fact it merely proves that Mycenaean art lasted more than a week. The marked similarity between the stele and the vase has given rise to the idea that both were suggested by one original; and in this connection another monument from Mycene is of some interest. This is the fresco from the Megaron;‡ though very fragmentary it shows warriors like those on the Warrior Vase, armed with spears, breastplate and greaves, and if complete might prove, perhaps, to contain the scene that suggested both the stele and the vase. Besides the well-known series of Mycenaean craters from Cyprus, which though of cruder workmanship resemble the Warrior Vase in shape, in the use of figure-decoration, and in the representation of a costume not seen in the earlier Mycenaean periods, there are also many examples from the mainland of Greece and the islands. The following list includes the most accessible specimens, but is probably far from complete. The type of the Warrior Vase being also an innovation, I have included certain vases which agree in shape though they show no figure-decoration.

Mykenische Vasen. Pl. VI, 32. From Ialysus. Shape only.

Mykenische Vasen. Pl. XV, 93. From Nauplia. Shape only.

Mykenische Vasen. Pl. XV, 97. From Nauplia. Chariot (frag.)

Mykenische Vasen. Pl. XXXVIII, 390-395. From Mycenae.

Fragments from different vases, showing chariots, horses, and men armed with helmets, greaves, spears, breastplates or tunics.

Mykenische Vasen. Pl. XXXIX, 403-407. Fragments with horses.

Mykenische Vasen. Pl. XL, 422. From Mycenae. Head of a man. Cf. Fig. 37, *op. cit.*

Mykenische Vasen. Pl. XLI, 426. From Mycenae. Figure.

---

† 'Eφ.' *Αρχ.*, 1896, pp. 4 ff. *B.S.A.*, XIII, p. 435, *note*.

‡ 'Eφ.' *Αρχ.*, 1888, pp. 164 ff., and Pl. II. Another fragment is in Tsountas and Manatt, fig. 15.

Mykenische Vasen. Pl. XLI, 425, 427, 429. From Mycenae.  
Warriors.

Mykenische Vasen. Pl. XLI, 423, 424, 428. From Mycenae.  
Animals.

Schliemann, Tiryns. Pl. XIV, XV, XVIIb, XIXa, XXIa, b.  
XXIIe. Chariots, horses, warriors.

Of the above examples most belong to Furtwängler's Fourth Mycenaean Style, but some are placed by him in the Third.

'Εφ. Ἀρχ., 1895. Pl. X, 12, 13. From Markopoulo. Figures.

„ „ 1895. Pl. X, 9. From Markopoulo, Shape only.

„ „ 1895. Pl. XI, 4. From Nauplia. Beasts.

„ „ 1904. Pl. From Muliana. Figures.

The Cypriote Mycenaean craters, though at first thought to be later than any Mycenaean remains on the mainland, are now commonly admitted to be Mycenaean in date as well as in style.\* This in itself would tend to put the Warrior Vase into the Mycenaean sequence, but the point at issue is rather whether the innovations to be seen on the Warrior Vase foreshadow the Geometric period. That the innovation in its painting takes the form of figure drawing, and not of geometrical patterns, seems to me conclusive. The first signs of a geometric age should rather be geometric;† and the Dipylon vases with chariot scenes are in fact later than those with purely linear designs. Some of the pottery from Tiryns, on the other hand, seems to be transitional to the geometric style; the human figures represented on it are unlike those on the Attic Dipylon vases, and its other decoration is geometrical.\* There are also differences to be seen in the paint and technique. These Tirynthian sherds, I suggest, may form a link between the Warrior Vase phase of Mycenaean pottery and the geometric style.

#### THE USE OF IRON IN HOMER

Before examining archaeological evidence for the earliest appearance of the peculiarly Homeric armour, a brief digression is needed on the vexed question of the usage of iron in Homer. Iron

\* A. J. Evans, *Journal of the Anthropological Institute* (hereafter *J.A.I.*) XXX, pp. 199 ff. Furtwängler, *Berl. Philol. Wochenschr.*, 1901, p. 141 ff. Poulsen, *Jahrbuch* 1911, pp. 247 ff.

† For fuller arguments cf. Mackenzie, *B.S.A.*, XIII, pp. 428 ff.

\* E.g., Tiryns, Pl. XXXIIIa.

is mentioned twenty-three times in the Iliad, and of iron the following objects are made. A club, perhaps only studded with iron (H 141); an arrowhead ( $\Delta$  123); the gates of Tartarus ( $\Theta$  15); the axle of Hera's chariot (E 723); knives ( $\Sigma$  34,  $\Psi$  30). In the other passages iron is used in a metaphorical sense or referred to in an unworked condition. In  $\Psi$  30  $\sigma\iota\delta\acute{\eta}\rho\varphi$  is used for an iron weapon, but as the passage refers to the cutting of an animal's throat, a knife is presumably meant; in  $\Sigma$  34, where Achilles cuts the throat of a captive youth, a knife also seems the natural weapon. There is no mention of iron swords, and wherever the metal of a sword is specified it is bronze. In Homer, as several authorities have pointed out, iron is still the agricultural weapon; it is not yet trusted for warfare. The Halstatt iron swords often used to illustrate Homeric weapons belong to a later age. Although in the present paper it is my aim only to see how far the Homeric poems compare accurately, or not, when taken in their simplest interpretation, with the archaeological evidence, one theory as to iron in Homer must be noticed because it is at once so comprehensive and so plausible. Professor Ridgeway argues that in Homer iron is in general use 'for all kinds of cutting instruments and for agricultural purposes,' and, according to him, Homeric swords were normally of iron. His argument for this view is briefly this: The word for bronze, the older metal, became identified with the weapon itself and continued to be used in the meaning of 'weapon' when the weapon actually referred to was made of iron. To illustrate this he quotes the English phrase, 'to smite with the steel'; but though this phrase illustrates the use of the name of the metal for the weapon, it also reveals the weakness of the whole theory. To be a genuine parallel it should be 'to smite with the iron.'\* The theory then that Homer describes a full iron age seems not conclusive in itself unless definite archaeological evidence can be brought to support it. At the same time it is quite probable that iron swords were not absolutely unknown to Homer; for, in any account of a transitional age, uniformity of expression cannot be taken to mean absolute

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\* The much quoted line in the *Odyssey*, 'Iron of itself doth attract a man,' occurs in very suspicious company, and by it it must be judged. Cf. Lang, *World of Homer*, p. 100; Monro, *Odyssey*, XIX, 1-50. notes.

uniformity in practice. Thus Homer tells of bronze swords and iron knives, which means that bronze swords and iron knives were usual; exceptions probably existed but were not worth mentioning. Homer describes characteristic features; he does not give a complete list of all varieties for the benefit of later commentators.

Nearly all the evidence collected below has been noticed previously, but much of it has been passed over in recent considerations of the Homeric age. An attempt to collect it may therefore be justified.

The following instances exemplify the use and knowledge of iron in the Mycenaean age:—

*In the Second Late Minoan Period.*

An iron ring from the Vaphio tomb. *Cf.* 'Εφ. 'Αρχ., 1889, p. 147.

An iron ring from a tomb at Kakovatos. *Cf.* *Ath. Mitt.*, 1909, p. 275.

*In the Third Late Minoan Period.*

Two iron rings from tombs at Mycenae. *Cf.* 'Εφ. 'Αρχ., 1888, pp. 135, 147.

Iron pin with ivory handle. Enkomi. Tomb 74. *Cf.* *Excav. in Cyprus*.

Iron knife with ivory handle. Enkomi. *Cf.* *Excav. in Cyprus*. Fig. 25, No. 1482.

Iron knife with ivory handle, and one iron fragment. Enkomi. Tomb 58. *Cf.* *Excav. in Cyprus*. Pl. II, 995. [p. 31 says 'two iron knives,' but only one exists.] This tomb, according to Poulsen, is one of the later in the cemetery; he suggests XII-XI century for its date. *Jahrbuch*, 1911, p. 247.

Traces of an iron object in a Mycenaean tomb, at Mulianà, in Crete; bronze bosses and bronze swords of a late type were also found. *Cf.* 'Εφ. 'Αρχ., 1904, p. 2 ff.

In another tomb at Mulianà were two burials, one inhumation of late Mycenaean date, and one cremation, usually described as of the 'geometric' age; to this burial are attributed an iron sword and a knife. The ashes were in a crater which is a degenerate example of the Warrior Vase type.

As soon as 'geometric' pottery begins iron becomes commonly

used for weapons, and in tombs at Kavousi, containing vases still Mycenaean in shape though geometric in decoration, iron swords and spears were found.\*

#### SHIELDS

Although some consider the epithets *κυκλοτερής*, *εὐκυκλος*, *πάντοσ' εἶση*, *ὀμφαλόεσσα* applicable to 'figure-of-8' Mycenaean shields, this view is by no means generally accepted. It is said that *εὐκυκλος*, *πάντοσ' εἶση* and *ὀμφαλόεσσα* indicate round shields, and particular stress is laid on the last of the three epithets. Thus, Professor Ridgeway regards the explanation of *ὀμφαλόεσσα* by certain small disks found in the shaft graves at Mycene, perhaps derived from the rims of shields, as highly improbable.† He points out that *ὀμφαλος* means 'navel' and so can only properly refer to a 'central boss.' Two passages are quoted to support this view. 'ὁ δ' ἄρ' ἀσπίδος ὀμφαλον οὖτα' (N 192). This may mean 'It struck a boss of the shield.' The other passage is fortunately more definite (A 32 ff.). The shield here described has one *ὀμφαλος* in the middle, and around it are 'ten circles of bronze with twenty *ὀμφαλοι* of tin.' This shield I believe to have been round, and very probably to have come from Cyprus where, as will be seen, round shields were in use. But since even a round shield can have only one centre, the twenty other *ὀμφαλοι* cannot also have been 'central bosses.' Telamonian Ajax had a shield like a tower. This may have been a great oblong Mycenaean shield or possibly a figure-of-8 shield. The former, perhaps, seems more natural. No one, I believe, suggests it was round, yet in H 267 it is hit *μέσσον ἐπομφάλιον*. Thus *ὀμφαλος* and *ὀμφαλόεσσα* whenever they occur need not always indicate round shields, Figure-of-8 shields with *ὀμφαλοι* are seen on Mycenaean rings;‡ bronze bosses, perhaps from round shields, were found in a late Mycenaean tomb at Muliana.§ The early evidence for round shields has recently been collected by Helbig to whose paper I refer.|| His

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\* *American Journal of Archaeology*, 1901, pp. 132 ff.

† *Op. cit.*, p. 319.

‡ E.g., Tsountas and Manatt, p. 181, fig. 75.

§ 'Εφ. 'Αρχ., 1904, p. 45, fig. 11.

|| Helbig, *Jahreshefte*, XII, pp. 1 ff.

reconstruction of the bronze figurines seems very plausible. A round shield appears on the Phaistos disk; this, however, is not Minoan, but its significance will be referred to later. The shields on the painted stele from Mycenae and on the Warrior Vase are often considered round, though they are not in the latter case truly circular. One sherd in the Warrior Vase style§ shows a circular shield; and there is another example on an ivory handle from the Mycenaean cemetery at Enkomi.¶ A fragment of porcelain from the Third Shaft-grave at Mycenae shows a warrior with a round shield and a helmet with horns. This object may be of Cypriote origin.

Round shields, then, though rare, occur before the end of the Mycenaean age. The argument as to the non-existence of blazons in Homer and their existence in the Mycenaean age is largely a question of when a blazon is not a blazon but a purely decorative ornament. If the 'gorgon of fell aspect' on Achilles' shield is not a blazon, there seems little reason why blazons should be attributed to Mycenaean shields. The archaeological evidence is extremely slight; a few stars or decorative bosses, and perhaps the lion mask and silver ox head from Mycenae, all of which are very uncertain.|| I can find no clear examples of blazons before the 'geometric' period, when they can be seen on late Dipylon vases.

### GREAVES

In Homer the Achaeans are often called *εὐκνήμιδες* and once *χαλκοκνήμιδες*. Greaves or leggings are frequently represented in Mycenaean art;\*\* they can be seen on the Warrior Vase and on the painted stele. They were fastened on below the knee and round the ankle. The material of which they were made cannot be determined; on the painted stele they are blue-grey like the corselets, but the colour may be conventional. A pair of bronze greaves, however, were found in a Mycenaean tomb in

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§ *Myk. Vasen*, Pl. XLI, 427.

¶ A. J. Evans, *J.A.I.*, XXX, pp. 209, fig. 5, 213 ff.

|| Ridgeway, *op. cit.*, p. 305 ff.

\*\* On rings, cf. Tsountas, *Μυκῆναι*, Pl. V, 4, 5. 4 is from the third shaft-grave. On gems, cf. *Myk. Vasen*, Pl. E, 30. On sherds analogous to the Warrior Vase, cf. *Myk. Vasen*, Pl. XXXVIII.

Cyprus\* with a typical Mycenaean sword. These greaves were fastened on by wires. Metal greaves are, therefore, Late Mycenaean. The 'Mycenaean' designs on some of the greaves from Glasinatz† make it quite possible that the usage of metal greaves spread from south to north.

#### SPEARS

No attempt has been made to differentiate the blades of Homeric spears from those found in the Mycenaean age. All Mycenaean spears are of bronze, and Homer never mentions a spear of iron. The sockets of many of the late Mycenaean spears are joined at the side and pressed firmly on to the shaft by a thin bronze band.‡ In many examples, owing to rust and corrosion, this band appears to be joined to the socket. With this form of fastening, compare Hector's spear with its three bands of gold (Z 320). The spears from the shaft graves are of a different construction, the socket is solid and has no band. A distinction has been drawn between the butts of Homeric and Mycenaean spears; *οὐριάχος* (N 448, Π 612, P 528) need mean nothing more than 'the butt end'; it may, however, as Ridgeway suggests, mean a knob: *σαυρωτήρ* (K 158) must mean a spike. The word itself occurs only once in the Iliad, but a spike is implied elsewhere. A spike at the butt, as is well known, appears on the Warrior Vase, and there are actual spikes, probably from spears, from Nauplia and Mycenae.§ From their provenance these should be of Late Mycenaean date. An iron spear head, with other iron weapons, was found in a tholos tomb at Kavousi, with vases still largely Mycenaean in style but under strong geometric influence.||

#### HELMETS

Homeric helmets seem to have been of various shapes, and many of their varieties cannot be accurately defined. One kind (K 261) was made of leather strengthened on the outside by boar's teeth

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\* *Brit. Mus. Cat. Bronzes*, No. 74. *Excav. in Cyprus*, p. 16, cf. *J.A.I.*, XXX, p. 214.

† For the importance of these Mycenaean motives, cf. A. J. Evans, *J.A.I.*, XXX, p. 217.

‡ There is a good example from Nauplia in *Nat. Mus.*, Athens. The same device appears on a spear from Ialysus, *Myk. Vase*, Pl. D, 12.

§ *Athens Nat. Mus. Cat. of Mycenaean Collection*, 2554, in type like the Glasinatz example figured in *Early Age*, p. 432. For a possible example from Crete, cf. *Mon. Antichi*, XIV, p. 466, fig. 73 f.

|| *A.J.A.*, 1901, pp. 132 ff.

strung together. Several representations of this kind have been found in tombs of the Third Late Minoan Period at Mycenae, Spata, Menidi and Enkomi, and a number of actual boar's teeth bored at the end have also been found. No trace of this kind of helmet has yet occurred in a deposit of the 'geometric' age. The epithets applied to helmets in Homer are important; they fall into two classes, those whose meaning is more or less obvious and those whose meaning usually depends on the Homeric views of the translator. I take the first class first: χρυσείη, χαλκοπάρης, πάγχαλκος. These epithets must imply metal helmets and metal cheek pieces, and the interpretation by leather caps with metal plates or bosses seems niggardly. The helmets on the Warrior Vase may be of metal, but they have no cheek pieces.

A few sherds of approximately the same date seem to show helmets with cheek pieces, but the drawing is very crude. On the large steatite vase from Hagia Triadha, however, a helmet, almost certainly of metal and with cheek pieces, is clearly portrayed. The likeness the helmet bears to the later classical types is in many ways remarkable, but as to its early date there is no doubt.

Τρυφάλεια, τετραφάληρος, φάλος, ἄφαλος, ἀμφίφαλος, τετραφαλος and φάλαρα are all obscure. Φάλαρα, (Π 106) in later times meant a boss or ornamental plate. What the spots on the Warrior Vase helmets may mean cannot be definitely decided. Φάλος according to Helbig, Ridgeway, and others, is the later κῶνος or ridge across the helmet into which the crest was fixed. Others, however, translate 'horn-like projections,' which seems better on account of N 132, where 'projections' are essential. The helmets on the Warrior Vase have horn-like projections, and also the helmet on the porcelain fragment referred to above from the Third Shaft-grave.

#### BREASTPLATES

The warriors on the fresco, the painted stele, and the Warrior Vase from Mycenae, as well as those on several sherds of the same date, are wearing breastplates. The precise form and material cannot, however, be determined. Corselets appear on the Knossian tablets, and may also be recognised on a few gems.\* The carved

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\* *Corolla Numismatica*. 1906, p. 357. *Discoveries in Crete*, p. 37.



ivory from a Mycenaean tomb at Enkomi, already referred to in connection with the round shield, gives an excellent representation of the Homeric warrior's outfit, as was pointed out not long after its discovery. 'Here, as in the Iliad, the belt or girdle—the Homeric ζωστήρ—which seems to have been fastened behind, follows the lower rim of the cuirass . . . Just, too, as in the Epic we see that ζωστήρ reinforced by a second belt—ζῶμα—with its belt plate or μίτρη, so on the ivory relief there is seen a double raised ring around the warrior's waist.'\*

#### DRESS

For costume, as opposed to armour, there is little direct evidence. It is clear that Homer does not describe the loin-cloth costume of the early Mycenaean men, nor the bodices and skirts of the early Mycenaean women. But before the Mycenaean age ends, a change in costume occurs. With one exception, from Curium,† none of the Cypriote Mycenaean craters show the skirt-and-bodice costume. The costume there indicated is probably the same as that worn by the woman on the Warrior Vase, and this, as Ridgeway has pointed out, resembles that of the Achaeae dams.‡ Since fibulae are intimately connected with certain types of costume, the date at which they first appear may be used as evidence for a change in dress. Men clad in trailing robes are not unknown in Mycenaean art,§ and the figures in the chariots on the Cypriote craters are clad in costumes which, if male, are different from the normal costume of the earlier Mycenaean period. There is, therefore, evidence for a change in costume towards the end of the Mycenaean period, which may fulfil the Homeric requirements.

#### FIBULAE

The occurrence of fibulae in the Third Late Minoan Period is well substantiated by the finds from various sites. The precise date in that period at which they are first found is difficult to determine; though on the mainland of Greece and in Crete a late date is

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\* A. J. Evans, *J.A.I.*, XXX, p. 274.

† *Excav. in Cyprus*, p. 73.

‡ Ridgeway, *Early Age of Greece*, p. 299.

§ *Antike Gemmen*, Pl. II, 39, 47.

tolerably certain. The northern origin of the fibulae, which is the theory most commonly held, may perhaps be questioned. It is apparently based on the view that the past history of the fibula can only be found in the north, and that the fibulae at Mycenae are chronologically earlier than those found in Cyprus, but at the same time it is recognised that whether northern or no the examples from Mycenae are not of a very early date.\* The fibulae, both from Mycenae and from Cyprus, are, however, so primitive in form that they are clearly only recent inventions, so that the invention of the fibula and its use in the Aegean are not separated by any great space of time. Straight pins with holes or loops have been found in Cyprus, and it has been suggested that the fibula was evolved out of these; but this theory is rejected by Professor Ridgeway, who derives the fibula from straight pins with a spiral twist, such as are found at the head of the Adriatic. This derivation may be correct, but as similar pins have been found at Mycenae† a northern origin is not necessarily implied. In Cyprus fibulae similar to those from Mycenae occurred at Enkomi,‡ where several craters, with figure decoration showing a change from the old Minoan dress, were also found. At Curium, together with Mycenaean vases (which though L.M. III, are not apparently late products of that period) was a crater of the Warrior Vase shape, but with figures on it in the old Minoan costume; with this crater was a fibula.§ The fibula in Cyprus, therefore, coincides with the appearance of the crater shape, and the older costume on this one example is a survival, and was probably not worn by the owner of the tomb. The Cypro-Mycenaean crater, the fibula, and a new costume, appear at the same time and come probably from the same direction. On the revised and now generally accepted dating for the Cypriote finds, the fibulae at Mycenae must either be put early in L. M. III or else, if kept for a late period in it, be considered chronologically later than those in Cyprus. The types of the Enkomi examples are very similar to those from Mycenae; the Curium type is almost triangular in shape owing to the height of the stilt; but though it is thus typologically

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\* Cf. Ridgeway, *op. cit.*, pp. 752 ff.

† 'Εφ. 'Αρχ., 1888, Pl. 8.

‡ *Excav. in Cyprus*, p. 68, A. J. Evans, *J.A.I.*, XXX, p. 204.

§ *Excav. in Cyprus*, p. 73, fig. 127. A. J. Evans, *op. cit.*, p. 204. J. L. Myres, *Liverpool Annals*, 1910, p. 140.

closer to the iron age bow-fibulae than the examples from Enkomi it may still belong to an earlier age. It belongs probably to another series of types. There is then some evidence in favour of the view that the fibula came into the Mycenaean world from the direction of Cyprus.

### SWORDS

We have seen that the view that Homeric swords were usually of iron is not self-evident. Homeric warriors used the cut as well as the thrust; the former is mentioned twenty-four times, the latter eleven. This proves that both methods of attack were in vogue, but it does not prove that the one was commoner than the other. A great warrior would naturally employ the newest mode of fighting and would also have the newest type of weapon. A cutting sword differs from a thrusting sword, and was a late development in the Aegean. Homer, moreover, is mainly concerned with great warriors. It is frequently argued that the change from a thrusting sword to a cutting sword implies a change from bronze to iron. It is said, for example, that it was only by the discovery of iron that the warrior was furnished with a strong sword with which a blow could be dealt without the danger of the blade snapping at the hilt;\* but if this is so there should be a difference in type between the latest bronze swords and the earliest of iron. This, however, is not the case, the sword type changes before the metal and the early iron swords are of the same type as the immediately preceding swords of bronze.† The difference between a cutting and a thrusting sword lies in the nature of the blade and in the hilt.‡ Length has little to do with the matter. The long rapiers from the shaft graves are suitable only for thrusting, but the broad-bladed swords of the later Mycenaean period could be used for a cut. Odysseus had a *τανύηκες ἄορ*; this was more probably a long rapier than an iron sword from Central Europe. A broad-bladed cutting sword is seen carried by 'Minoans' on the Seumut tomb. Mr. Hall in his account of this fresco, comments on its large size, but suggests that like the

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\* Ridgeway, *op. cit.*, p. 303 ff.

† *Prehistoric Tombs of Knossos*, p. 113. *J.A.I.*, XXX, p. 218.

‡ This can be demonstrated by experiments with paper knives with solid handles and those with fancy handles.

vases it may be exaggerated.\* If, however, the drawing is in proportion the blade of this weapon is still considerably under three feet in length.†

#### ARROW HEADS

In Homer one arrow is of iron.‡ The Mycenaean examples are of obsidian, flint or bronze.§ Many are barbed and were fastened on by a sinew or string. The barbs of Homeric arrows must have been thin; they bent when being pulled out of a wound.|| A common Mycenaean type answers to these requirements, which is barbed and made out of a thin and flat piece of metal.

#### CHARIOT WHEELS

It is doubtful whether the arguments¶ based on the eight-spoked wheels of Hera's chariot can be proved either way. Eight-spoked wheels are by no means universal in the districts where the home of the Achaeans has been found. In the Aegean, in all periods, four spokes are the usual number in representations of chariots, and their appearance consequently in later times can hardly be used as evidence for Pelasgian survivals. The number of spokes represented was probably largely an artistic convenience.\*\* Models of four-spoked, six-spoked and eight-spoked wheels have been found at Mycenae in Late Mycenaean surroundings.††

#### HAIR‡‡

It is also doubtful if the 'κάρη κομόωντες' Achaeans and the 'ἔπιθεν κομόωντες' Abantes could be distinguished on the monuments unless the latter wore a very definite form of pigtail. Further, there are no monuments which can be attributed to the

\* *B.S.A.*, XVI, pp. 254 ff.

† It reaches from the top of the head to just below the top of the belt. For the man's height I have assumed the very liberal allowance of 6 feet.

‡ Il. Δ 132-140.

§ *Prehistoric Tombs of Knossos*, p. 32.

|| Il. Δ 214.

¶ Ridgeway, *op. cit.*, pp. 325 ff. It is, of course, an assumption that Hera's chariot was typically Achaean.

\*\* If, however, representations are to be trusted, eight-spoked wheels seem common in the East. Compare for a later date Sidonian coins.

†† In *Nat. Mus. Athens Cat. of Mycenaean Collection*, No. 2592, 2600.

‡‡ Ridgeway, *op. cit.*, p. 327.

Abantes in particular. Metal spirals, probably for the hair, have been found in several Mycenaean tombs. These are quoted to prove that these tombs are not Achaeae. Spirals of the same kind also occur in the sub-Mycenaean cemetery at Salamis, where cremation is known. The reason for believing that the use of spirals for the hair is not Achaeae is the description of Euphorbos, a Trojan and not an Achaeae, with his locks bound with gold and silver. Nastes, however, also not an Achaeae, went to the war adorned with gold. This probably refers to ornaments in his hair; it cannot refer to his armour, and the line ends in contempt, 'ἤύτε κούρη' (B 872). The inference is that Achaeae women bound their hair in golden ornaments although the men did not. Gold spirals are consequently no evidence *against* Achaeae unless they are found in men's graves. On the other hand, they are not by themselves evidence *for* Achaeae since other races also used them.

Early Attic tradition has been invoked on this and several Homeric questions. There is, of course, good literary evidence for believing Attica to have been Pelasgian in the sense that it was never conquered by alien invaders, but, on the other hand, Attica not only welcomed refugees from all quarters, but made them citizens.\* To separate the Pelasgian element from the rest in Attica is therefore more difficult than in the case of other states.

#### CATTLE

Homer, it has often been suggested, seems to know of two breeds of cattle, one short-horned and the other long-horned. The long-horned type is very common in Mycenaean art, but the short-horned type is also known, and appears on the Cretan hieroglyphs. 'This seems to be an indigenous species, of which skulls were found in the votive deposits of the Dictaen cave, and to which Professor Boyd Dawkins has given the name of *Bos Creticus*. It is allied to the *Bos longifrons* or "Celtic Short-horn".'† To this type may belong the 'calves' and the gold pendants from a tomb (L. M. III) at Hagia Triadha‡ and the seven ivory heads from the town at Mycenae.§

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\* *Thuc.* I, 2.

† *Scripta Minoa*, p. 206.

‡ *Mon. Antichi*, XIV, p. 729, figs. 27, 28, 29.

§ *Nat. Mus. Athens Cat. Mycenaean Collection*, No. 3046.

## BURIAL

In this section I hope to show that there are already some signs that cremation was practised in Greece before the 'geometric' age, and that this practice is not necessarily connected with the appearance of geometric pottery. That burnt geometric burials are found in a later period is no evidence against this view, as the practice of burying the dead is of a more permanent nature than a style of vase painting. In view of the attitude of despair at the lack of Homeric cemeteries some explanation is needed. It will presumably be admitted that there was a transitional period between the pure Mycenaean and geometric styles in which men died and were buried, though hardly any graves at all, Achaean, Homeric or otherwise, have been found. The reason for the want of evidence is briefly this. At the end of the Mycenaean age there was a great shifting of habitation. Cities and towns were deserted and their positions moved, sometimes only a short distance, but at times the new sites were entirely separate. Sparta is a good example. The result has been that the latest deposits of the older age have been much destroyed by weather and exposure, so that for this period, which happens to be all important, cemeteries are at times the only surviving evidence. Cemeteries, however, are either very difficult to find or else, if easy, nearly always prove to have been plundered in antiquity. There is a lack, not of Homeric graves, but of graves of any kind which fall into what was probably the Homeric age.

In the Mycenaean cemetery at Nauplia cremation in a few cases seems to have been employed. This has, however, been suspected, I give, therefore, the references to the literature on this point and leave it an open question.\*

At Mouliana, in Crete, a tholos tomb was found containing two burials, probably not very far removed from each other in date. To the earlier (inhumation) burial are attributed† late Mycenaean vases and bronze fibulae, and to the later burial (cremation) some vases that may be called 'geometric,' and an iron sword and knife; the burnt bones were in a crater of the Warrior Vase type. This burial I should call post-Homeric on the grounds of the iron

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\* *Myk. Vasen*, p. 45. 'Αθήναιον VII, pp. 183 ff., VIII, pp. 517 ff.

† A peasant moved the objects before the tomb was scientifically examined. 'Εφ. 'Αρχ., 1904, pp. 2 ff.

weapons; others will disagree, but this point cannot be settled until further evidence is found. If the fibulae go with the earlier burial, knowledge of fibulae is certain for the period of the later. The iron weapons, as well as the geometric vases, show that the crater is late in the class to which it belongs. This might perhaps be deduced from its style, but since Crete at this period was unimportant, the very degenerate decoration might be due to other reasons. The crater then represents the earlier elements in this burial, and the geometric vases and iron weapons the later. One of these geometric vases is in shape and decoration almost identical with the very early geometric vases from Theotokou in Thessaly,\* which are found in tombs where there is no trace of cremation at all, so that the geometric influence in this tomb does not seem to account for the cremation. The crater, therefore, is a cremation crater not by chance but by design, and the rite of burning as well as the crater belong to the earlier elements in this transitional tomb.

Cremation may be the intention of all the Mycenaean craters of this type.

In the very late Mycenaean or sub-Mycenaean cemetery, on the island of Salamis,† cremation and inhumation were both practised. Unfortunately, all the burials were poor, and there is no evidence for weapons. Bow fibulae were found, and the vases, though in many cases still of Mycenaean shapes, were decorated with geometric designs. There can be little doubt that the geometric style was in vogue in Greece at the time to which this cemetery belongs. It has been claimed by different writers as Achaeae and as Dorian, but it may be questioned if cremation was a Dorian rite.

On the theory developed in the present paper it would be Achaeae in rite though early Dorian in date. Except in the case of the big craters, only probably available for the rich, no distinction seems to exist between 'Achaeae' and non-Achaeae Mycenaean pottery. The Achaeae introduced certain innovations into Mycenaean civilisation, but did no more. This is clear from the Homeric poems in which the whole background is Mycenaean, and so detailed that it is not remembrance of a bygone age but the account of a vivid present. How far cremation was universal among

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\* For the connections of the *Thessalian Geometric* with Crete cf. *Prehistoric Thessaly*.

† *Ath. Mitt.*, XXXV, pp. 17 ff.

the Achaeans, or how numerous Achaeans were, is very doubtful. Homer only describes the funerals of great chieftains. The tombs at Kavousi which contained iron weapons, contained vases somewhat analogous to those from Salamis, but more 'geometric' perhaps in style. The number of weapons found show that iron was by that time common. These tombs are consequently post-Homeric. None of the bodies were cremated.

#### SUMMARY

Having examined in order the evidence for the more important features in Homeric armour and life, which have been used to differentiate it from the Mycenaean age, we may now summarise the results. If by Mycenaean is meant only up to and including the Shaft graves at Mycenae (L.M. I, L.M. II), Homeric armour is, in the main, not Mycenaean at all; nor does it coincide with the earlier part of the next period (L.M. III), at least in Crete and on the mainland of Greece. A change, however, occurs in the Third Late Minoan Period, and in a late phase of this period, before the 'geometric' style of pottery begins, the raw material for Homeric armour, such as round shields, cutting swords and metal greaves, is to be found. In other words, the criteria for Homeric armour in view of later discoveries are now seen to exist in an earlier period than had often previously been thought. Despite the important changes in armour, costume and in certain other features, this late phase of Mycenaean civilisation is very closely connected with the preceding age; the civilisation is, in fact, still Mycenaean, though many innovations have been imposed upon it from without. The chief ceramic changes are a few new vase types and the use of figure decoration in vase painting; but the point to be decided is whether this foreshadows the 'geometric' style or not. Dr. Mackenzie, after a detailed examination of the pottery decides against 'geometric' influence; and the fact that the chief innovation in the pottery consists of the use of human figures, and not in new geometric patterns, is strong evidence that this view is correct, and that this change is in no sense due to the creators of the Dipylon style, for in the series of vases from the Dipylon cemetery figure decoration is admittedly a sign of a late rather than of an early date.



The concomitant phenomena of this late Mycenaean period of vase painting are all important. The view that the Third Late Minoan Period is a period of degeneration requires modification in many important respects, for towards the end there are signs of an artistic revival in vase painting, and the characteristics of this age, as a whole, when compared with the age that preceded it, include a great abundance of ivory, glass paste and amber. Amber, a definite case of importation from the North, was perhaps bartered for ivory, an equally definite importation from the East. For the latter half of the Third Late Minoan Period the extent of the East may be limited. Furtwängler's fourth Mycenaean vase style is hardly if at all represented in Egypt, and the break thus indicated in trade between Egypt and Greece seems to continue until near the end of the age of Greek 'geometric' pottery. The East may, therefore be restricted to Anatolia and the lands adjacent to Cyprus. The designs on the Mycenaean ivory mirror handles—mirrors are an innovation in L. M. III—though they recall Egyptian models are not purely Egyptian, and probably only influenced by Egypt, perhaps indirectly. It is also noticeable that for many of the requirements of Homeric armour we have had recourse to Mycenaean Cyprus. Apart from amber it is difficult to decide how much definite northern influence exists in the Third Late Minoan Period. Although the general use of iron in the Dipylon age coincides with an invasion from the north, the first knowledge of iron in Greece may easily have been derived from another quarter. The archaeological evidence for iron in the Mycenaean age has been already noticed, and with it may now be compared the legends of the Telchines and Dactyls, who are never located in the north-west. Rhodes and Crete have a strong claim to these mythical metal workers. There seems now to be no doubt that iron was known, though not commonly used, in Egypt from a very remote period, so that Greece may have first acquired iron from Egypt, and the parallel, often previously suggested, between 'ba-n-pet' and 'σιδήρεος οὐρανός' tends to support such a view. If the revised and earlier dating for the Mycenaean remains in Cyprus is correct, the northern origin of the fibula is still far from certain, the more especially as there is evidence for the extension of Mycenaean designs up to the head of the Adriatic and

beyond. Ivory is found at Halstatt, the Mycenaean motives on the greaves from Glasinatz have already been noticed, and decoration in the form of zones or friezes of animals was probably employed in Mycenaean art before it reached more northern Europe.\* Round shields, on the existing evidence, seems to appear in Cyprus and in the east before they are found in Greece, and an eastern rather than a northern origin is consequently indicated.† The Mycenaean cutting sword, as opposed to the earlier rapier type, is usually regarded as of European origin, and at present the evidence is in favour of such a view. It is, however, important to notice that this change in type does not coincide with a change in metal, and that broad-bladed swords were used by the Shardina.

Although many of the changes in armour and costume are particularly noticeable in Mycenaean Cyprus, it is clear that they cannot have originated in that island, and that if they appear earlier there than in Greece itself their home must be looked for somewhere in Anatolia or even further east. It is necessary, therefore, to see what evidence, if any, exists to support such a view. There are good grounds for believing that the Phaistos disk is Anatolian and, moreover, from a region not far remote from Lycia, owing to the marked resemblance between the forms of the later Lycian tombs and the pictures of certain buildings seen on the disk.

Other resemblances have been recognised between it and certain objects from Cyprus. Thus round shields and a form of head-dress are common to the disk and to the Enkomi ivories. The absence of pinched narrow waists and the existence of a short tunic unlike the normal Minoan loin cloth, are also points of resemblance.‡ In this connection the series of bronze male figurines, recently restored very plausibly by Helbig, by the addition of a round shield deserve notice. Their round shields are, of course, problematical; but their conical helmets, ending in a knob, seem to be of the same type as certain of those on the ivories from Cyprus. These figures also wear

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\* Cf. ivory pyxis from Menidi. *Das Kuppelgrab bei Menidi*, Pl. VII. A similar pyxis is seen on the fresco from Tiryns.

† Helbig, *op. cit. passim*, but compare Ridgeway, *op. cit.*, pp. 453 ff. for a Northern origin. Round shields were probably indigenous in both regions. The first round shield in Greece, I think, came from the East; the Dorian round shields, on the other hand, connect with the North rather than any other region.

‡ *Scripta Minoa*, p. 25.

a short tunic, which is not quite the Minoan loin cloth, and their waists are not pinched. If provenance is of any value their home should be on the mainland opposite Cyprus, but in view of current theories it is necessary to add that there are no grounds as yet for considering them Phoenician. The costume in itself is strong evidence against it. It is more probable they have the same general origin as the disk itself. The possible Anatolian origin of many of the types of armour discussed above in no way prevents them from being Achaeans. The northern origin of the Achaeans is a theory mainly based on archaeological evidence, and there is, I believe, no literary evidence to support it, which cannot be otherwise explained. Greek tradition never brings the Achaeans from the north, and is almost silent as to their origin.\* Pelops, according to legend came from Anatolia, and a Hittite origin for him has been suggested.† In the Egyptian records the Akaiusha are mentioned together with the Turusha, Shakalessa, Shardana and Luka, the last three of whom are identified with Sagalassi, Sardinians and Lycians. The identification of the Turusha with the Tylistians of Crete has also been suggested but does not seem certain.‡ Although it is quite possible that the Akaiusha of the Egyptian records may have come from the mainland of Greece, a position in or near Anatolia would be more natural. If, too, of Anatolian origin their migration thence into Greece may have been part of the same movement that brought them into conflict with Egypt, and this conflict also may have caused the break in trade relations between Greece and Egypt which can be observed towards the end of the Mycenaean age. The records of the Akaiusha belong to the reign of Merenptah, 1235-1214 B.C., a date not incompatible with the traditional Greek date for Pelops who came from Asia.

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\* T. W. Allen, *Classical Review*, XXV, pp. 233 ff.

† H. R. Hall, *J.H.S.*, 1909, pp. 19 ff. Ridgeway, in *Minos the Destroyer, etc.*, now brings some Achaeans from the East. There is, however, no break in culture at the beginning of L.M. III.

‡ Another suggestion is with a tribe near Tarsus.

# CATALOGUE OF JETTONS OR CASTING-COUNTERS, FOR USE ON THE COUNTING-BOARD OR CHEQUER, AT THE INSTITUTE OF ARCHAEOLOGY IN THE UNIVERSITY OF LIVERPOOL

BY PROFESSOR F. P. BARNARD

- 1.—*Obverse*. A conventional king's head, full-faced, within a circle: a border of pellets in lieu of a legend. *Reverse*. A short cross recerclée, within a circle, cantoned by four pellets; a border of pellets. Both faces are mute, as is usual with this class of counter. Size, according to Mionnet's scale,  $4\frac{1}{2}$ . All the coins in this list are of latten, bronze, or copper, unless otherwise specified. An English, or Anglo-French, jetton of the Sterling Type: last quarter of the 13th century. (*Cp. La Tour, Collection Rouyer*, 1899, No. 677; Snelling, *View of Jettons*, 1769, Pl. I, 10.) These pieces were not understood by Ducarel, who called them Black Money (*Anglo-Gallic Coinage*, 1757, p. 100, Plates XIV, 35, 36, XV, 41), confusing them with the French *Denier Noir* of unplated billon, or *Zwaarte*, as it was called in the Low Countries. [Pl. I, 1.
- 2.—*Ob*. As that of No. 1. *Rev*. A long cross recerclée, cutting the inner circle, cantoned by roses; a border of pellets. Each face is mute, the place of a legend being occupied by pellets. Size 4. This and No. 1 are of the same class, and perhaps were struck at the famous Tournay Mint. Many of these counters of the Sterling Type are found partly or wholly pierced (as both Nos. 1 and 2 are) in the middle. Since repeated proclamations and statutes (*e.g. Statutum de Moneta*, 1292) ordered that false coins were, on detection, to be bored through the middle, it may be that these were issued in that state to prevent their being plated and passed as silver pennies, as the above mentioned Black Money often was. The proverb *Faux*

*comme un jeton* points to such practices, as does the distich: *La bourse pleine de gettoers, Pour dire qu'ils ont de l'argent*, from Coquillart's *Monologue des perruques*; 15th cent. For an instance of the pillory being inflicted for passing gilded counters as money see Riley, *Memorials of London*, 1868, pp. 418-9, and *Liber Albus*, 1861, p. 521. (*Cp.* Snel., Pl. I, 1, Rev.) [Pl. I, 2.]

- 3.—*Ob.* An open crown. Legend: AVE MARIA GRACIA P[LENA].  
*Rev.* A cross of three strands fleurdelisée and fleuronée pierced with a quatrefoil centre, all within a quatrefoil fleuronée. Legend: AVE G[RACIA] in the spandrels of the outer quatrefoil. Size 6½. Lombardic lettering. Jetton of the 14th century resembling the type of Maine (Feuardent, *Jetons et Méreaux*, 1904-7, I, p. 206), perhaps suggested by that of the *Royal* of Louis IX, 1226-70. (*Cp.* La Tour, No. 1115; Snel., Pl. II, 14, 15.) [Pl. I, 3.]
- 4.—*Ob.* A heater-shield bearing the arms of France-modern. Legend: AVE MARIA GRACIA. *Rev.* A cross of three strands fleurdelisée pierced with a quatrefoil centre, all within a quatrefoil. Legend: A[VE] M[ARIA], twice, in the spandrels of the outer quatrefoil. Size 8. Lombardic lettering. Fourteenth century jetton, probably from the Tournay Mint. (*Cp.* La Tour, No. 1175; Snel., Pl. II, 6, 7, 8.) [Pl. I, 4.]
- 5.—*Ob.* A dolphin embowed, to the left. Legend: AVE MARIA GRACIA PLE[NA]. *Rev.* As that of No. 3. Legend: AVE M[ARIA] in the spandrels of the outer quatrefoil. Size 7. Lombardic lettering. A 14th century jetton of Dauphiné, as the dolphin shows. (*Cp.*, Feu., II, p. 481; La Tour, p. 203, and Pl. XXV, 2; Snel., Pl. II, 2.)
- 6.—*Ob.* A king, standing under a canopy, with a long sceptre in his right hand. Legend: AVE MARIA. *Rev.* As that of Nos. 3 and 4. Legend: +AV[E] G[RACIA] in the spandrels of the outer quatrefoil. Size 6. Lombardic lettering. This jetton is copied from a coin-type: that of the French *Royal d'or* from 1322 to 1349. (*Cp.* La Tour, No. 1093; Snel., Pl. II, 18.)
- 7.—*Ob.* A king seated on a throne, with a sword in his right

hand; by his left knee is a small rampant lion. Mute: in the place of a legend is an ornamentation. *Rev.* A cross fleurdelisée cantoned by quatrefoils. Legend: GLORIA TIBI DOMINE. Size  $5\frac{1}{2}$ . Lombardic lettering. This jetton appears to copy the type of the *Escu d'or* of Philip VI and John II of France (1328-64), but omits the shield, the lion in the place of which perhaps was borrowed from the *Lion d'or* of the same period. (*Cp.* Snel., Pl. II, 20.)

- 8.—*Ob.* I.H.S. The H is cross-headed. Legend: AVE MARI[S] STELLA DEI MATE [R]. The first letter of *Stella* does duty also for the last letter of *Maris*: the *r* at the end is crowded out, as often happens in legends. *Rev.* A cross fleurdelisée cantoned by quatrefoil flowers issuing from the ends of the cross. Legend: the same as on the *Ob.*, but *Mater* is spelt in full. Size 7. All the lettering is Lombardic. Jetton of a Religious Type, from the Tournay Mint. According to Dugniolle (*Le Jeton Historique des Pays Bas*, 1876, I, Pref. XL) there is evidence that these pieces were issued at the time of the Great Pestilence in the Low Countries, 1338-40, and during the Black Death, 1347-9. Possibly they were blessed, and regarded as amulets. The *Ob.* legend gives the opening words of the Vesper Hymn sung at the Feast of the Virgin, which are an allusion to the supposed etymology of the name Mary in Hebrew, *i.e.* 'Star of the Sea.' (*Cp.* La Tour, Nos. 1446, 1447; Snel., Pl. II, 27, 28.)
- 9.—*Ob.* A Saracen's head, to the right, encircled with a fillet. Legend: AVE MARIA GRACIA PLE[NA]. *Rev.* A bowed cross of two strands fleurdelisée, pierced lozengy, cantoned by cinquefoils; in the centre of the piercing a fleur-de-lys. Legend: + A VE M AR[IA], arranged between the points of the cross. Size  $4\frac{1}{2}$ . Lombardic lettering. Jetton of the Royal Almoury of France: before 1500. Some examples have as *Ob.* legend *Sarasin svi vraie*. (See Feu., pp. 230-1; La Tour, pp. 207-8, and Pl. XXV, 7; Snel., Pl. II, 22.)
- 10.—*Ob.* A conventional single-masted ship at sea, without sails;

for legend a succession of Lombardic letters devoid of meaning. *Rev.* The arms of France-ancient in a lozenge. Legend: as on the Obverse. Size 7. The familiar jettons of this class were struck at Nuremberg, probably in the first instance for use in Paris, as their *Ob.* and *Rev.* types combined suggest the arms of that city (see on No. 26), and some examples bear the legends, *Voleue la gallee de France*, or *Vive le bon Roy de France*. (See, too, on No. 12.) They spread, however, widely, and are still common in England. The pseudo-legends that appear on many were perhaps due to an intentional avoidance of any particular language on pieces manufactured for cosmopolitan sale. Counters of this pattern were evidently made in great numbers during the 15th and 16th centuries, possibly even a little later, the antique features and lettering being preserved as a convention. On the kindred piece, No. 12, though, which dates from before 1600, we see a step towards realism. These, and other *jetons banaux*, or *jetons de pacotille*, as the French numismatists call them, being generally rude of execution and evidently issued at a low price, are apt to be regarded as beneath notice. Such pieces, nevertheless, which were used by the mass of the population of Western Europe, possess to some extent an even greater human interest than the more artistic and expensive coins struck for the purposes of great families or of government departments and corporations. (*Cp.* Snel., Pl. III, 4.) [Pl. I, 5.

11.—*Ob.* A conventional single-masted ship sailing to the left. The sea is not shown. Legend: SCHIFFENING NVREMBERG. *Rev.* Similar to that of No. 10. Legend: HANS KRAUWINCKEL GOTES. Size  $7\frac{1}{2}$ . A less common variety of the class to which No. 10 belongs. Second half of 16th century, the period of Hans Krauwinckel, the most prolific of the Nuremberg makers. From this piece inclusive onwards all lettering is Roman. (*Cp.* Snel., Pl. III, I.)

12.—*Ob.* A similar ship to the last, but with three masts, and with much less conventional rigging. She is sailing to

the left, and the sea is shown. Legend: HANS SCHVLTES ZV NVRENBURG. *Rev.* Similar to that of Nos. 10 and 11. Legend: HANS SCHVLTES NORNBE[RG]. Size  $7\frac{1}{2}$ . Second half of 16th century. On a counter of the same type, issued by Hans Laufer, of Nuremberg (c. 1610-43), is the legend *Fluctuat nec mergitur*: see on Nos. 10 and 26.

- 13.—*Ob.* The arms of France-modern in a cartouche shield set on a bracket, ensigned with an arched crown, and surrounded by the Collar of the Order of St. Michael, between two laurel branches. Mute. *Rev.* In the centre, in three lines, is the inscription CAMERA COMPTOR [VM] REGIOR [VM] between two crescents; above is an arched crown, below is H for *Henricus*. Legend: NOSCENDA EST MINERVA SVI. 1557. Size 8. Jetton of the *Chambre des Comptes* of Henry II of France. For the Collar of St. Michael, with its scallop-shells connected by a plexus of chains, and its pendent medallion bearing the image of the Saint, see Favine, *Theater of Honour*, 1623, III, vi, 371. The crescents on the *Rev.* were a device of this king adopted when Dauphin, and continued after his accession, in honour of Diana of Poitiers, and appear also on several of his coins. The *Rev.* legend is perhaps based on *Vulgate: Matt.*, vii, 2; *Marc.*, iv, 24; *Luc.*, vi, 38. (*Feu.*, No. 1722.) [Pl. I, 6.

- 14.—*Ob.* The union of the Three Estates of the Realm symbolized: *Mars* (the Nobility) and *Justitia* (the Judicature) reconciled by *Pietas* (the Church). At the feet of *Justitia* are the Tables of the Law, at those of *Pietas* the Bible. Legend: AMANS FAVENSQ[VE]. In *Ex.* are two interlaced c's, a device of Charles IX of France, and a pair of olive branches crossed through them. *Rev.* Two interlaced c's, with an arched crown above and a lys below, all between a couple of columns each flanked by a lys. The rest of the field is occupied by palm branches. Legend: PIETATE ET IVSTITIA. In *Ex.* CARO[LVS] IX. Size 8. Medalet-Jetton of c. 1565: probably of German make. The *Ob.* is copied from the *Rev.* of a French Medalet-Jetton of 1564 or 1565, perhaps commemorating the



inauguration of a new *régime*, as the King attained his majority in the former year. The pair of columns and the legend on the Rev. formed the device and motto of Charles IX, godson of the Emperor Charles V, who had taken as a device the Pillars of Hercules. The *Non* (or *Ne*) of the 'Herculean inscription' was supposed to have been removed by Charles V: *Plus ultra Herculeas, Calpen Abilamque, columnas, | Carole, victoris nobile nomen habes.* (Reusner, *Imperatorum Symbola*, 1607, III, 240.) 'Ce type des deux colonnes, avec l'écu de France et la couronne (*cp.* No. 17) nous paraît signifier que la Piété et la Justice sont les soutiens de la royauté.' (Blanchet, *Jetons de Henri II de Navarre*, Dax, 1886, p. 13. *Cp.* Bie, *La France Métallique*, 1636, Pl. 64, xii, and p. 193; Fontenay, *Manuel de Jetons*, 1854, p. 374.)

- 15.—*Ob.* Charles IX of France (1560-74) and his brother Alexander, Duke of Orleans, in Roman armour, standing and holding between them a branch with three lys; the former is indicated by the Gallic Cock, the latter by a wolf. (See his jetton of 1563 in Bie, Pl. 72, i, and p. 213.) Legend: *FORTIT[VDO] GALLIA[E]*; the latter word is blundered. In *Ex. H.K. Rev.* Perseus on Pegasus flying in the air to the right; the earth below. Legend: *PERSEVS.* In *Ex. H. KRAV.* Size 7½. Medalet-Jetton struck at Nuremberg by Hans Krauwinckel *temp.* Charles IX. The *Ob.* is copied from the *Rev.* of a French Medalet-Jetton of 1566. For the type of the *Rev. cp.* Symeon's *Vita et Metamorfoses d'Ovidio*, Lyons, 1559, p. 72, whence it was perhaps taken. It appeared later in Reusner's *Emblemata*, Frankfurt, 1581, No. 1. Devices taken from the Emblem Books are found on many jettons of the 16th and 17th centuries; see *e.g.*, No. 93. (*Cp.* Bie, Pl. 65, xvii, and p. 196; Snel., Pl. IV, 18.) [Pl. I, 9.]

- 16.—*Ob.* A shield of France-modern, ensigned with an arched crown between a laurel and a palm branch, and surrounded by the Collar of St. Michael. Legend: *CAMERAE COMPUTOR[VM] REGIORVM.* *Rev.* Peace and Justice

standing and crossing a palm (olive?) branch and a sword through a laurel wreath; between them is a tripod. Legend: SVB DVCENDIS RATIONIBVS. In Ex. 1570. Size 7½. Jetton of the *Chambre des Comptes* of Charles IX of France. The Rev. legend (wrongly translated in *Medallic Illustrations of British History*, I, p. 163, No. 147) means 'For casting accounts,' and is commonly found on counters of this department, and occasionally on those of the *Chambre des Monnaies*, in the second half of the 16th century. (Feu., No. 1744.) [Pl. I, 7.]

- 17.—Ob. A king (as is shown by the arched crown above his head) in a lion's skin, removing the Pillars of Hercules; on the right are the Tables of the Law and a pen, on the left a bow and quiver. Legend: HERCVLE MAIOR ERIT. In Ex. 1588. Rev. A shield of France-modern ensigned with an arched crown; beneath are two interlaced c's; all between a pair of columns, flanked on the right by a bow, quiver, etc., emblems of Hercules, on the left by the Tables of the Law and a branch of laurel. Above the whole is a canopy. Legend: PIETATE ET IVSTITIA. In Ex. HANS S. Size 8. This is a type of Charles IX of France (see on No. 14), but dated within the reign of his brother and successor Henry III (1574-89,) and struck at Nuremberg by Hans Schultes for general use, though primarily perhaps for France. The Rev. type is copied from a jetton of Charles IX of 1561 or 1562. (Cp. Bie, Pl. 63, iii, and p. 189; Snel., Pl. IV, 7, Rev.)
- 18.—Ob. A shield of France-modern, ensigned with an arched crown, and surrounded by the Collar of St. Michael. Legend: NIL NISI CONSILIO. Rev. Three arched crowns arranged in triangle, the uppermost surrounded by clouds. Legend: MANET VLTIMA [CORONA] CELO. Size 8. Gilt. Jetton of the type of the *Conseil du Roi*, temp. Henry III of France (1574-89). The Ob. legend, which is regularly found on counters of this department is perhaps based on *Vulgate*, Prov. xv, 22: *Dissipantur cogitationes ubi non est consilium: ubi vero sunt plures consilarii, confirmantur*. On the Rev. the two lower crowns are those

of France and Poland, the third, or Heavenly, crown awaits the King above. *Cp.* the familiar passage in Lydgate (*temp.* Henry VI of England), and his 'application' of the three crowns on the banner of St. Edmund to Henry VI, assigning two to France and England and the third to the future celestial crown:—  
 'These thre crownys historyaly t'aplye, | By pronostyk notably sovereyne | To sixte Herry in fygur signefye | How he is born to worthy crownys tweyne, | Off France and England, lyneally t'attheyne | In this lyff heer, afterward in hevene | The thrydde crowne to receyve in certeyne | For his merits above the sterrys sevene.' (*Cp.* Rev. of No. 21.) This piece was perhaps minted at Nuremberg: if so, it is a copy of the corresponding French piece. The design first appears in France on a Medalet-Jetton struck in, or about, 1575 by the Estates of Burgundy, in commemoration of the progress made through their province that year by Henry III. (Blanchet, *ibid.*, p. 12; Font., 268-9; Feu., No. 9771.) It was adopted on a royal jetton of 1577 (Bie, Pl. 75, xix, and p. 221), and is often found during his reign. [Pl. I, 8.

- 19.—*Ob.* The type is that of No. 18, the legend as that of No. 16. *Rev.* Fame, standing, and blowing her trumpet. Legend: SVB DVCENDIS RATIONIBVS. (See on No. 14.) In Ex. 1576. Size 8. Jetton of the *Chambre des Comptes* of Henry III of France (Feu., No. 1755.)
- 20.—*Ob.* As that of No. 19. *Rev.* An allegorical female, standing, holds in her right hand the decalogue, in her left a globe. Legend: as on Rev. of No. 19. In Ex. 1577. Size 8. Jetton of the same department and reign as the preceding piece. (Feu., No. 1756.)
- 21.—*Ob.* A soldier in Roman armour, standing, to left; on his head a helmet, in his right hand a cresset (?), in his left a spear. At his feet the sword and helmet of (?) a defeated enemy. Legend: AVT CAESAR AVT NIHIL, the famous motto of Caesar Borgia. In Ex. H.K. *Rev.* (A variant of that of No. 18, *q.v.*) Three crowns arranged in

triangle, the two lower ones open, the upper one arched and among stars. In the centre a palm and a laurel branch tied together; six lys are disposed about the field and fill up the vacant spaces. Legend: as on Rev. of No. 18, but COELO. Size  $7\frac{1}{2}$ . Struck at Nuremberg by Hans Krauwinckel. This Rev. is copied from a French jetton of 1584 or 1585, given in Bie, Pl. 78, xxxvii, and p. 231. (*Cp.* Snel., *Pl.* IV, 17, Rev.)

22.—*Ob.* A pair of clasped hands, holding two cornuacopiae, between which is a caduceus. Legend: PAX ET FOEL [ICITAS] TEMP[ORVM]. In Ex. MDLXXXIX in two lines. *Rev.* Venus, Minerva, and Juno, standing, with their respective attributes of Cupid and his bow, spear and Gorgon-shield, and peacock. Legend: PALLAS IVNO VENVS. Size 8. This is classed by Feuardent (No. 7490) as a jetton of Charles III, Duke of Lorraine from 1543 to 1608; but it was doubtless made by Hans Krauwinckel of Nuremberg, as the Rev. is from a die for his Classical Series (Nos. 83, etc., below). The same *Ob.* had appeared on a counter of 1560 of the French Mint (Feu., No. 2138; with which *cp.* Bie, Pl. 62, vi, and p. 186, of the same year; also his Pl. 66, xxiii, and p. 199 of the year 1568, and Pl. 100, cv, of 1608. In 1660 it occurs again on the Rev. of a jetton of Poitou: Feu., No. 9045.). The date on this piece would suit the alliance made in Ap., 1589, between Henry III of France and Henry of Navarre and the Huguenots against the Guises and the Catholic Confederacy, which it may commemorate, but Bie gives no French medal or jetton to suit that occasion. (Snel., Pl. IV, 12.) The type of the clasped hands with a caduceus between them was taken from the Roman coinage: *e.g.* the *Fides Publica* silver of Titus (Stevenson, *Dict. of Rom. Coins*, 1889, p. 149); as was the legend *Temporum Felicitas*. (*Ibid.*, pp. 113, 380, 782-3.)

23.—*Ob.* The shields of France and Navarre *accolés*, ensigned with an arched crown, and with an H for *Henricus*, through which laurel branches pass, below them. Round the shields are the collars of the Orders of St. Michael and the

Holy Ghost (?). Legend: the same as that on the Ob. of No. 16. *Rev.* A crowned globe (the earth) surrounded by three concentric circles composed successively of water, air (shown by clouds), and fire. Legend: *NUMERO STANT OMNIA CERTO. In Ex. SVB DVCE[NDIS]RATIO[NIBVS].* 1600. in two lines. Size 8. Jetton of the *Chambre des Comptes* of Henry IV of France. When two chains surround the shields, that of St. Michael is always the inner one. (See on No. 13.) The *Rev.* type and its legend meant that the rule of Henry was as stable and regular as the processes of Nature. It will be noticed that a legend is often the *fag-end* of a Latin hexameter. Camden (*Remains*, 1674, 366-7) says: 'A motto is most commended when it is an Hemistich, or parcel of a verse.' (*Feu.*, No. 1784; *Font.*, p. 127; *Bie*, Pl. 91, LI, and p. 273.) [Pl. I, 10.]

- 24.—*Ob.* The French King, bare-headed (as Caesar), in armour, and with the commander's scarf and baton of his time, riding to the left (*cp.* No. 41). Legend: *HENRI[CVS]IIII D.G. FRANCOR[VM] ET NAVAR[AE] REX.* In *Ex. H.K.* divided by a cinquefoil. *Rev.* On an altar two columns supporting an arched crown (*cp.* No. 14). Round the right hand column is entwined a laurel, round the other a palm branch, which are tied together with a bow. Legend: *FœDERA MAGNI REGIS SACRA.* Size 7½. Medalet-Jetton issued by Hans Krauwinkel of Nuremberg in imitation of the French medal of 1602, struck on the occasion of the renewal of the alliance with the Swiss. Feuardent (No. 1155*b*) places this among the counters of the French Government Department of the *Suisses et Grisons*. (*Cp.* *Bie*, Pl. 94, LXIX, and p. 283; *Font.*, p. 155; *Snel.*, Pl. V, 3, *Rev.*)

- 25.—*Ob.* The King of France, in armour and sword in hand, riding triumphant to the right over a battlefield strewn with weapons, etc. As on No. 24, he wears a commander's scarf. Legend: *HENRICVS IIII GALLIA [sic] ET NAVARA [sic] REX.* *Rev.* The shields of France-modern and Navarre flanking a drawn sword, hilt downwards, between laurel branches. The blade passes through an

open crown and the point penetrates a heavenly chaplet set among clouds, from which proceed rays and branches of laurel and palm. Legend: OMNIS VICTORIA A DOMINO. Size 7. Medalet-Jetton struck at Nuremberg in commemoration of Henry's victory at Arques in 1589; the Rev. follows that of the French medal. (Bie, Pl. 83, i, and p. 247.) The Rev. legend was probably suggested by *Vulgate*, I *Paralip.*, xxix, 11.

26.—*Ob.* A three-masted ship at sea, sailing to the left. Legend: FLVCTVAT NEC MERGITVR. *Rev.* Representation of the town of Nuremberg, with Mercury flying in the sky, symbolizing its commercial importance. Legend: NVRENBERG. In Ex. two palm and two laurel branches crossing, flanked by H.K. Size 7. Jetton issued by Hans Krauwinkel of Nuremberg, *temp.* Henry IV of France; perhaps primarily for use in Paris, as the ship and its legend suggest, for the former is taken from the arms of that city, a ship under sail, with a chief semy of fleurs-de-lys. The ship was typical of commerce, the lys of the loyalty of the capital to the crown. On some early 15th century jettons of Paris, however, the ship is identified with the Church, as is shown by the following distich which occurs on them:—*Svr toutes cites Paris prise: Car sa nef figure leglise.* The motto *Fluctuat at nunquam mergitur*, or *Fluctuat nec mergitur*, appears on Paris jettons first in 1581 and 1585 respectively. (See, *e.g.*, Affry, *Les Jetons de l'Echevinage Parisien*, 1878, pp. 3-7, 18, 21.) The Rev. of this piece is virtually an advertisement of the maker's name and address. (Snel., Pl. IV, 2, 6.) [Pl. I, 11.]

27.—*Ob.* Similar to that of No. 25, but the king is bare-headed (as Caesar: *cp.* Nos. 24, 41, 98.) Legend: HENRIC [vs] IIII LA [*sic*] ROI Æ [=DE] FRAN[CE]. In Ex. H.K. divided by a quatrefoil. *Rev.* The type bears a general resemblance to the Rev. of No. 25: the shields of France-modern and Navarre separated by branches of laurel. Above them is a dolphin, on whose head an arm, descending from heaven, places a crown. Legend: A FRANSVA . A

DAFIN . A NAVARA. 1604. Size 8. *Jetton Banal* issued by Hans Krauwinckel of Nuremberg, perhaps in the first instance for use in Dauphiné. The Dauphin named in the Rev. legend is Louis (Dauphin from 1601 to 1610), afterwards King as Louis XIII. (Font., p. 45; Feu., Plate II, 28, Ob.)

28.—Ob. Shield of arms of France-modern, ensigned with an arched crown, and surrounded by a collar. Legend: HENRI[CVS] IIII ROY DE FRAN[CE] ET NAVARES. Rev. Two nude children, seated on a hillock, embrace with one arm and hold each a lys in the disengaged hand; rays from Heaven descend upon them. Legend: HOC FOEDERE LILIA FLORENT. Size 4½. Medalet-Jetton commemorating the marriage of Henry IV of France with Mary dei Medici in 1601: perhaps distributed to the populace upon the occasion. The Rev. legend, of course, refers to this alliance. (Cp. Bie, Pl. 92, LVII, and p. 277.)

29.—Ob. As that of No. 23. Rev. Apollo and Diana, as children, stand, holding hands, on the island of Delos. A fleet surrounds them as protection. Legend: STAT PROLE HAC ALTERA DELOS. In Ex. SVDDVCENDIS RATIONIBVS. 1603. Size 7½. Jetton of the *Chambre des Comptes* of Henry IV of France. This piece commemorates the birth of two of Henry's children, Louis, afterwards Louis XIII, and Elizabeth, afterwards Queen of Philip IV of Spain. In the Rev. legend *stat* refers to the island being chained by Jupiter to the bottom of the sea in order to provide a safe resting place for Latona during the birth of her children Apollo and Diana. (Feu., No. 1788; Rouyer, *Revue Numis. Belge*, 1884, Pl. I.)

30.—Ob. The princess Henrietta Maria, standing, facing to the front; in her right hand is a branch of myrtle (?), her left rests on a table, on which is a vase of lilies, representing her native land. Legend: HENR[ICI] GALL[IAE] REG[IS] FILIA. Rev. Probably the apple of Venus. Legend: CEDENT TRES VNI. H. KRAUWINGEL. Size 8. This Medalet-Jetton from Nuremberg celebrates the marriage of Henrietta Maria, daughter of Henry IV of France, to Charles I of

England on 13 June, 1625. The myrtle on the Ob. would be appropriate as the *myrtus conjugala* of Cato, sacred to Venus. (Pliny, *Hist. Nat.*, XV, 36, 37.) The Rev. legend, taken as meaning 'Three will accrue to one,' may signify that three kingdoms, England, Scotland, and Ireland, will fall to Henrietta. (Feu., No. 12,033, and Pl. VI, 125A; Snel., Pl. V, 10.)

31.—Ob. Bust of Louis XIII of France to left, laureated and wearing a ruff. Legend: GRATVM QVO SOSPITE COELVM. Rev. Similar in type to the Ob. of Nos. 23 and 29, but below the shields is L, for LVDOVICVS. Legend: LVDOVICVS XIII FRANCORVM ET NAVARAE REX. Size 8. This Medalet-Jetton must have been issued early in the reign, as the young head and the ruff show: probably in 1615 (see Feu., Plate III, 62.) It is a good example of the great superiority of French over German work. In the Ob. legend *gratum* must be taken as 'thankworthy'; which suggests that thanks were due to Heaven for having preserved the king till the attainment of his majority, which was on 27 Sept., 1614, when he reached his fourteenth year. The French kings then came of age. Medallie jettons are often a year late: see on No. 37.

32.—Ob. Young bust of Louis XIII of France, to right, crowned and wearing a ruff. Legend: LVDO[VICVS] XIII D. G. FRANC[ORVM] ET NA[VARAE] REX CHRISTIANA [blundered for CHRISTIANI[SSIMVS]]. Rev. The city of Reims; a hand from Heaven supplies the *ampulla* containing the oil of consecration. Legend: FRANC[IS] DATA MVNERA COELI XVII [OCTOBRIS 1610]. In Ex. RHEMIS. W. L. 1615. in two lines. Size 8. A reminiscent Medalet-Jetton commemorating the coronation of this king at Reims 17 Oct., 1610, issued presumably by Wolf Lauffer of Nuremberg (*cp.* No. 36), though from the red colour of the metal it resembles a Low Country counter. (Feu., No. 7884a; *cp.* Bie, Pl. 110, i, and p. 327. For a similar type in the next reign see Menestrier, *Histoire du Roy Louis le Grand par les Médailles, Jetons, &c.*, 1693, p. 5.)

33.—Ob. Similar in type to that of No. 23, including the collars,



but below the shields is a crowned monogram which is not clear; perhaps **L** and **M** for Louis XIII and his mother the queen-regent Mary, or **H** and **L** for Louis and his father Henry IV. Legend: **LVDVICVS XIII D.G. FRANCORVM ET NAV[ARAE] REX.** *Rev.* A young tree growing round and clothing with foliage its dead parent stem so as to make it appear alive. Legend: **VIVERE CREDIT AMOR.** Size 8. Medalet-Jetton of Louis XIII; undated, but 1611. The *Rev.* type is emblematic of the youthful king's love for the memory of his father, and its legend, perhaps suggested by Verg., *Æn.*, I, 222, is to be explained as *Amor filii patrem vivere credit.* (Bie, Pl. 110, iv, and p. 328.)

- 34.—*Ob.* Similar in type to No. 33. Legend: **LVD[OVICVS] XIII D. GR. FRANCORVM ET NAVAR[AE] REX.** *Rev.* The eagle of Jupiter, representing France, darting thunderbolts, but holding in his beak an olive branch. Legend: **PACEM DVELLO MISCVIT.** In Ex. 1615. Size 8. The *Rev.* type and legend explain one another, and perhaps refer to the winning over of the Parliament of Paris by the Queen-Regent Mary dei Medici from the malcontent nobles which averted civil war.
- 35.—*Ob.* Similar in type and legend to No. 18 (*q.v.*), but the outer collar is added, as on No. 31. *Rev.* A hand from Heaven weighing two crowns, that of France accompanied by the sceptre and the Hand of Justice, the other by ears of corn. Legend: **QVO LILIA VERGVNT.** In Ex. 1633. Size 7½. Jetton of the *Conseil du Roi* of Louis XIII of France. The *Rev.* type and legend seem to signify that the royal government and national prosperity tend to an equipoise. (Feu., No. 143; Bie, Pl. 129, cxviii, and p. 397.)
- 36.—*Ob.* The busts of Louis XIII of France and his queen Anne of Austria, jugate, to right, both crowned and wearing ruffs; the king in armour. Legend: **LVDO[VICVS] XIII D.G. FR[ANCORVM] ET NA[VARAE] ANNA AVSTR[IAE] HISPANI[AE].** *Rev.* A pair of hearts united by the words **CARITAS, SPES, FIDES,** in three fillets; above is an arched crown with

a palm and a laurel branch on either side; below are L for LVDOVICVS, and A for ANNA, divided by the Austrian eagle. On a ribbon beneath this is the inscription NVNQVAM MARCESCENT, under which is H.K. separated by a floral decoration. Size 8. Medalet-Jetton struck at Nuremberg by Hans Krauwinckel, commemorating the marriage of Louis with Anne in 1615. *Nunquam marcescent* is probably adapted from *Vulgate, Jac.*, I, 11: *dives marcescet*. (Font., p. 49; Snel., Pl. V, 8.)

37.—*Ob.* Similar to that of No. 36. The legend reads HISPAN. *Rev.* As that of No. 36, but the date, 1616, and the initials of the maker, W.L., are divided by the hearts, and there is of course no H.K. at the bottom. Size 8½. Medalet-Jetton, as the last, but struck by Wolf Lauffer of Nuremberg, and of ruder work. In the redness of the metal this piece resembles No. 32 by the same manufacturer. Medalet-Jettons often bear the date of their year of issue, not that of the event they record; thus, like this one, they are frequently a year late, sometimes more: *cp.* Nos. 31, 32, 38.

38.—*Ob.* Similar in type to the *Rev.* of No. 34, but the shields are somewhat smaller, and there are differences in the outer collar. Legend: LVDOVICVS XIII D.G. FRANCORVM ET NAV[ARAE] REX. *Rev.* The right arm of the Virgin issuing from Heaven, on the right, holds the crown of France, the reflection of which in the sea two dogs are trying to seize. In the left distance is the town of Rochelle. Legend: AVIDI FALLVNTVR IN VMBRA. In Ex. 1629. Size 7½. Medalet-Jetton commemorating the defeat of Buckingham at Rochelle in 1627, but dated two years later. The dogs on the *Rev.* represent England and the Huguenots. The type and the legend explain each other, and doubtless were suggested by Phaedrus, *Fab.*, I, iv, *Canis Deceptus*. (*Cp.* Feu., 9097—9101). [Pl. I, 12.

39.—*Ob.* Bust of Louis XIII to left, laureated and wearing a toga. Legend: LVD[OVICVS] XIII D.G. FRANC[ORVM] ET NAVA[RAE] REX. *Rev.* A cornucopiae showers from Heaven fruits, corn, etc., upon persons of both sexes, who

collect them in baskets and bags. Legend: DIVITIAS DIIDANT ET JVRA FRVENDI. In Ex. 1639. Size  $7\frac{1}{2}$ . The Rev. legend seems to be adapted from Horace, *Epist.*, I, iv, 7: *Di tibi divitias dederant artemque fruendi*. This was a year of success for French policy, which may be here recorded. [Pl. I, 13.]

40.—*Ob.* Similar in type to that of No. 39. Legend: LVDOVIC[VS] XIII D.G. F[RANCORVM] ET NA[VARAE] REX. *Rev.* A dolphin coiled round an anchor. Legend: AD SPEM SPES ADDITA GALLIS. In Ex. 1643. Size  $6\frac{1}{2}$ . Medalet-Jetton of Dauphiné commemorating the birth of Philip, Duke of Orleans, second son of Louis XIII, apparently published at the time of the accession of his elder brother Louis XIV, who, of course, is referred to in the *spem* of the Rev. legend. (Feu., No. 11151a) The *Delphinus anchorae implicitus* is probably taken from the Rev. of a First Brass of Domitian, or of a Denarius of Titus. (Stevenson, pp. 44, 339.)

41.—*Ob.* Louis XIII on a prancing horse, to left, bare-headed (as Caesar; *cp.* Nos. 23, 27, 98), in armour, wearing a ruff and a captain's scarf, and holding in his left hand the baton of a commander, as on No. 24. Legend: LVDOVICVS XIII D.G. FRAN[CORVM] ET NA[VARAE] REX. *Rev.* Similar to that of No. 25. Legend: WOLF LAVFER RECHEN PFENING M[ACHER]. Size 8. A Nuremberg *jeton banal*, which, judging from the king's wearing a ruff, not a collar, was probably issued early in the reign. (Snel., Pl. V, 6.) For the scarf and baton of a military leader in the 17th century see the Title Page of Robert Ward's *Animadversions of Warre*, 1639.

42.—*Ob.* Bust of Anne of Austria to right. Legend: ANNA D. GRATIA FR[ANCORVM], continued on the Rev., ET NAV[ARAE] REG[INA] REGNI MODERATRIX. *Rev.* Shield of arms of France-modern impaling the partly dimidiated arms of Anne, ensigned with an arched crown and surrounded by an interlaced cordon. Size  $7\frac{1}{2}$ . Medalet-Jetton commemorating the Regency of the widow of Louis XIII during the minority (1643-61) of her son

**Louis XIV.** The arms of the queen-mother as displayed here are curious:—*Per fess* (A) *quarterly, Castile and Leon*; (B) *Austria-ancient* [gules, a fess argent; but wrongly shown: on some pieces of this series it is correctly given]; *over all are two escutcheons, dimidiated and attached to the palar line: that in chief the sinister half of the arms of Portugal, that in base the sinister half of those of Flanders.*

- 43.—*Ob.* Youthful bust of Louis XIV to right, laureated and in toga. Legend: LOVIS XIII ROY D[E] FR[ANCE] ET DE NAVARE. *Rev.* Three hearts ensigned with an arched crown. Legend: LES CŒVRS FIDELLES. Size 6½. Medalet-Jetton published in 1643 to commemorate the alliance of France, Portugal, and the Low Countries made on the 1st June in the preceding year. (Font., p. 157; *cp.* Feu., No. 161.) The *Rev.* type, with a different legend, had appeared in 1615 on a jetton of Louis XIII, symbolizing the union of the Three Estates under the Crown. (Bie, Pl. 114, xxix, and p. 342.)
- 44.—*Ob.* Nearly full-faced youthful bust of Louis XIV, in long hair; crowned, and wearing a lace-edged collar or 'falling-band.' Legend: LVDOVIC[VS] XIII D.G. FR[ANCORVM] ET NAVAR[AE] REX. *Rev.* In general similar to that of No. 34, but the shields have angular bases, and the details of the collars are fanciful owing to the ignorance of the designer or the die-cutter. Legend: CONRAD LAVFER RECH[EN] PFENIG MACH[ER] I[N] NV[RNBERG]. Size 7. A stock counter for general use, issued very early in the reign of Louis XIV, as the portrait shows. I have been unable to find any French model for this bust. [Pl. I, 14.]
- 45.—*Ob.* Young bust of Louis XIV to right, bare-headed, with long hair; in armour, scarf, and falling lace-collar. Legend: LVD[OVICVS] XIII D.G. FR[ANCORVM] ET NAV[ARAE] REX. *Rev.* Practically the same as that of No. 35, with slight differences of detail. These two collars are well shown in Menestrier, p. 5, fig. 3. Legend: NIL NISI CONSILIO. (See on No. 18.) Size 7. Jetton of the *Conseil du Roi*. Undated, but 1651. (*Cp.* Feu., No. 199.)

- 46.—*Ob.* Young bust of Maria Theresa to right. Legend: MAR[IA] THER[ESA] D.G. FR[ANCORVM] ET NAV[ARAE] REG[INA]. *Rev.* The queen in a canopied chariot, attended by halbardiers, etc., is about to pass under a triumphal arch. Legend: AVGVSTAE PACIFERAE LVTETIAM FELIX INGRESSVS. In Ex. 26 AVG. 1660. Size 8. Medalet-Jetton commemorating the state entry into Paris, on the date given, of Louis XIV and his bride Maria Theresa, after their marriage on the 9 June preceding. The *felix ingressus* of the *Rev.* legend occurs on the *Rev.* of a gold coin of Maximianus Herculeus. (Stevenson, p. 383.) There are numerous variants of this jetton. (See Feu., pp. 271-2, and Pl. xiii, 258; Menestrier, p. 36, fig. 31; *Médailles de Louis le Grand*, 1723, p. 59; Van Loon, *Histoire Métallique des Pays Bas*, 1732, III, 451; Dugniolle, *Le Jeton Historique des Pays Bas*, 1876-80, No. 4155; De la Hode, *Histoire de Louis le Grand*, 1740-2, II, 524, and Pl. V, 28; Bazin, *Hist. de France sous Louis XIII et Mazarin*, 1846, pp. 449, 453.) [Pl. I, 15.]
- 47.—*Ob.* Head of Louis XIV, to right, in periwig. Legend: LVDOVICVS MAGNVS REX. *Rev.* The eagle of Jupiter with thunderbolts in his left claw flying above a plain; a town (Dunkirk?) in the distance. Legend: SINE CRIMINE GESSI. Size 7. The *Rev.* is of the type of Feuardent's No. 655, a jetton of the *Extraordinaire des Guerres* of France for 1662. Contemporary, but possibly made in Germany.
- 48.—*Ob.* Bust of Louis XIV, to right, in periwig and Roman costume. Legend: LVD[OVICVS] XIII D.G. FR[ANCORVM] ET NAV[ARAE] REX. *Rev.* The sun shining on land from which young laurels are springing up. Legend: IVBET REVIRESCERE LAVROS. In Ex. ORDINAIRE DES GVERRES. 1664. Size 8. This is a modern re-strike (1860-70) from the original dies at the French Mint of the jetton of the department specified for the year named. The *Rev.* type possibly refers to the purchase of Dunkirk from Charles II of England in Nov., 1662. The sun represents Louis, having been chosen as his device by the Academy of Inscriptions constituted by him in the preceding year.

(Feu., No. 429; Menestrier, p. 47, No. 4.) Some of these restrikes have R.F. for *refrappe*, below the bust: others have a plain edge with *argent* or *cuivre* incuse upon it.

- 49.—*Ob.* Bust of Louis XIV, to right, in periwig and toga.  
 Legend: LVD[OVICVS] XIII D.G. FR[ANCO]RVM ET NAV[ARAE] REX. *Rev.* A hedgehog walking to the right.  
 Legend: MAGNI AGMINIS INSTAR. In Ex. EXTRAORDINAIRE DES GVERRES. 1667. Size 7½. The hedgehog occurs, as an appropriate symbol, on several of the counters of the French War Office; and the *Rev.* legend, which is from Verg., *Æn.*, VII, 707, is suited to its device. (Feu., No. 663.)
- 50.—*Ob.* Bust of Louis XIV, to right, in periwig and armour.  
 Legend: LVD[OVICVS] XIII D.G. FR[ANCO]RVM ET NAV[ARAE] REX. *Rev.* A swarm of bees; their queen surrounded by a glory. Above them are clouds, below is the earth. Legend: INSTANT OPERI BELLISQVE. In Ex. 1670. Size 6½. Jetton of the same department as Nos. 47 and 49. The *Rev.* legend was presumably suggested by Verg., *Æn.*, I, 508. (Feu., No. 669.)
- 51.—*Ob.* Older head of Louis XIV, to right, in periwig and laureated. Legend: LVDOVICVS MAGNVS REX. Under the truncation N. *Rev.* A conduit of Renaissance architecture with its fountain, explaining the legend: HINC DECVS VNDE EFFVNDIT. In Ex. CHAMBRE AVX DENIERS DV ROY. 1695. Size 7. Jetton of the department indicated. The N. on the *Ob.* may be the signature of Jacques Nili, who engraved medals and jettons at Paris from 1685 to 1695, and so signed himself sometimes: see Rondot, *Médailleurs en France*, 1904, p. 325. (Feu., No. 2411.)
- 52.—*Ob.* Muled Jetton composed of two Reverses: (1) Neptune standing, and brandishing his trident, in a shell-car drawn by a pair of sea-horses, to the left, over a calm sea. Legend: AEQUORA LUSTRANDO PACAT. In Ex. two palm branches crossed. (2) Aurora, holding a light in her uplifted left hand, drives a two-wheeled chariot and pair of horses, to the right, over clouds; below is the earth. Legend: LATE CVNCTA PROFVNDIT. In Ex. two palm

branches crossed. Size 7. The Neptune Rev. is that of the jetton of 1700 for the *Galères* of France, a department of the Marine. (Feu., No. 1441.) The legend was doubtless suggested by Verg., *Æn.*, I, 128-160. The Aurora Rev. is, in type, the same as that of the jetton of Marie-Adélaïde of Savoy, Duchess of Burgundy and mother of Louis XIV, for 1704 (Feu., No. 9744), but the legends differ. Here, if Aurora typifies the bounty of the Duchess, the legend is possibly founded upon Cicero, *De Off.*, I, 24, §84, ll. 1, 2. [Pl. I, 16.]

53.—*Ob.* Head of Louis XIV, to right, in periwig. Legend: LUDOVICUS MAGNUS REX. Under the truncation T.B. in monogram. *Rev.* The dragon Ladon guarding the golden apples of the Hesperides. Legend: SERVAT TERRETTQUE VICISSIM. In Ex. GALERES. 1709. Size 8. Jetton of the *Galères* of France. T.B. is the signature of Thomas Bernard (the second), 1675-1713, graver in ordinary to the king, and maker of a large number of medals and jettons: see Rondot, pp. 318-9. (Feu., No. 1463.)

54.—*Ob.* Bust of Louis XIV, to right, in periwig and toga. Legend: LVD[OVICVS] XIII D.G. FR[ANCORVM] ET NAV[ARAE] REX. *Rev.* A phoenix burning on a pyre kindled by the sun. Legend: VT SIT POST FATA SVPERSTES. In Ex. REVENVS CASVELS. 1667. Size 6½. Jetton of the department named in the exergue. On the Rev. the sun is, of course, Louis (see on No. 48); and the explanation is found in the legend of another jetton of the same type:—*Sin par el que arde, sin par lo que quema*, which originally referred to the king's marriage. The Rev. legend is evidently drawn from Verg., *Æn.*, XI, 160: *Vici mea fata, superstes*. (Feu., No. 2638; Menestrier, p. 46, Nos. 58, 65.)

55.—*Ob.* Bust of Louis XIV, to right, in toga and laureated periwig. Legend: LOVIS LE GRAND ROY DE FRANCE. Under the truncation L. G. L. *Rev.* An altar bearing an offering of ears of corn; about it are sheaves, behind it is a cornfield. Legend: PARVO PRO MVNERE QVANTA. In Ex. PARTIES CASVELLES. Size 6. The signature L. G. L. is

that of Lazarus Gothlieb Lauffer of Nuremberg, and the piece is a copy, on a reduced scale, of the French official jetton of the department indicated for the year 1697. L. G. Lauffer's imitations differ from the French originals in bearing no dates, in being smaller, and in representing the king as of mature age whatever might be the period of his reign to which the Rev. belonged. The introduction of these counterfeits into France was in 1672 made illegal (Abot de Bazinghen, *Traité des Monnoies*, 1764, I, 82), and all French pieces were ordered to be struck at the Louvre mint. This prohibition, however, was ineffective, and Nuremberg continued to flood France with *jetons banaux* which undersold the superior productions of Paris. In the Rev. legend *quanta* is the cornfield in the rear, which represents the great result of the little offering; and probably is meant to suggest how much the country gets back from the king in return for the small income of this department. (Feu., No. 2693.) [Pl. I, 17.]

- 56.—*Ob.* Head of Louis XIV, to right, in laureated periwig. Legend: LVDOVICVS MAGNVS REX. Signature under truncation L. G. L. *Rev.* France personified as a female, standing, facing to the right, and armed with helmet, spear, sword, and shield; at her feet are architectural implements. Legend: ARMIS NUNC TOTA. In Ex. scroll-work, instead of a date. Size 6½. For the signature see No. 55. Reduced copy (see under No. 55), made at Nuremberg, of the jetton of the French department of the *Bastiments du Roy*, or *Aedificia Regia*, for 1696. The *Rev.* type apparently alludes to the exhausted state of France at the opening of that year: no resources were left for the royal buildings, every penny being needed for military purposes. (*Cp.* Feu., No. 3055.) [Pl. I, 18.]
- 57.—*Ob.* Similar in type and legend to that of No. 56, but the king is not laureated, and with the same signature. *Rev.* The emblems of Hercules, his bow, club, and lion's pelt, laid aside in token of peace, rest against an unfinished building; a park, with an avenue, is on the right.



Legend: ET SVNT OTIA DIVIS. In Ex. EDIFICIA[sic] REGIA, above scroll-work in place of a date. Size 6½. For the signature see No. 55. Reduced copy (see under No. 55), made at Nuremberg, of the jetton of the *Bastiments du Roy* of France for 1697. The Rev. type and legend commemorate the Peace of Ryswick, 30 Oct. in that year. The incomplete masonry denotes the suspension of building operations referred to in connection with No. 56; while the Rev. type and legend of the next jetton issued for this department bears out the explanation given of these last two pieces:—Minerva laying down her arms, with the legend *Veteres revocabit artes*. [Pl. I, 19.]

- 58.—Ob. Bust of Maria Theresa, queen of Louis XIV, to right; older than that on No. 46. Legend: MAR[IA] THER[ESA] D.G. FR[ANCORVM] ET NAV[ARAE] REG[INA]. Rev. The Argo sailing back, to right, with the Golden Fleece hanging from its mast. Legend: MEVS ET MIHI VICIT IASON. In Ex. 1668. Size 7. Medalet-Jetton possibly commemorating the Treaty of Aix-la-Chapelle between France and Spain, 2 May, 1668. The portrait of Maria Theresa would be appropriate, as she was the daughter of Philip IV of Spain; and the Rev. type with its legend would be easily intelligible: Louis being Jason, his queen Medea, her father Aeëtes, and the French conquests in the Spanish Netherlands the Golden Fleece, which, too, would have a further symbolical reference to the Order of Flanders. Van Loon, however, (III, 14, 15) allots this piece to the first conquest of Franche-Compté: see under No. 60. [Pl. I, 20.]

- 59.—Ob. Young bust (cp. No. 46) of Maria Theresa, to right. Legend: MAR[IA] THER[ESA] D.G. FR[ANCORVM] ET NAV[ARAE] REG[INA]. Rev. A burning-glass standing on a plain with the sun shining through it. Legend: HINC SPLENDOR ET ARDOR. In Ex. 1669. Size 7. Medalet-Jetton originally struck to commemorate the marriage of Louis XIV and Maria Theresa (Menestrier, p. 46, fig. 57); but as this is dated nine years later, it evidently continued to be issued long after the event. Possibly it was a

popular piece that sold well. On the Rev. the sun is the king, as usual, the burning-glass the queen. The type and legend explain one another. The same device had occurred earlier on two jettons of Fabert, sheriff of Metz in 1611 and 1624 (Robert, *Jetons de Metz*, 1853, pp. 35-6, Pl. II, 1, 3; and on a jetton of the queen-mother Mary dei Medici, of 1620, where she is the glass, her son Louis XIII the sun. (Bie, Pl. 107, xxxi, and p. 321); and appeared later on one of 1701, of Marie-Adelaïde of Savoy, wife of Louis, Duke of Burgundy (grandson of Louis XIV), and mother of Louis XV. (Feu., Nos. 9731-9736a; Font., p. 60.) [Pl. II, 1.

60.—*Ob.* As that of No. 49. *Rev.* Louis XIV, in Roman costume, holding up in his right hand a palm branch, in his left a figure of Victory, stands between France, resting after battle, and Burgundy, kneeling and presenting him with a palm. Legend: LVDOVICO XIV OB SERVATAM VICTIS SEQVANIS PROVINCIAM. Size 7. Medalet-Jetton commemorating the first conquest of Franche-Comté by Louis in 1668. (Feuardent, No. 9803; Van Loon, III, 137; Menestrier, p. 37, fig. 49.) [Pl. II, 2.

61.—*Ob.* As that of No. 56. *Rev.* Victory flying to the right, holding in her right hand a laurel wreath, in her left a standard of the arms of France; below are a cannon, powder-barrels, shot, and flags. Legend: PVGNA AD SENEFAM. Size 6½. Counter struck by Lazarus Gothlieb Lauffer of Nuremberg in imitation of the Medalet-Jetton commemorating the battle of Senef, at which William of Orange was defeated by Condé, 11 Aug., 1674. The *Rev.* type advertizes the capture of colours and munitions of war made by the French. (*Cp.* Van Loon, III, 144; Dugniolle, No. 4326; *Médailles de Louis le Grand*, 1723, I, 137; De la Hode, III, 506, and Pl. XIV, No. lxxix.) [Pl. II, 3.

62.—*Ob.* Similar to that of No. 51 (*q.v.*), but not laureated. *Rev.* Victory, standing on the hull of a classical warship, brandishes in her right hand a thunderbolt and holds in her left a palm branch. Legend: INCENSA BATAVORVM

CLASSE. Size 6½. Medalet-Jetton commemorating the burning of the Dutch fleet at Tabago on 3rd March, 1677. The Rev. type bears a strong resemblance to that recording the naval victory of Demetrius Poliorcetes over Ptolemy, given in Montfaucon, I, Pl. 16, iv. (Dugniolle, No. 4374; Van Loon, III, 208; Menestrier, p. 20; De la Hode, IV, 109, and Pl. IV, No. xxiii; *Médailles de Louis le Grand*, 158.)

63.—*Ob.* Two marshal's batons, ornamented with lys, in saltire, passing through a cypher composed of two italic L's; the whole ensigned with an arched crown. Legend: CONNETABLIE MARECHAUSSEE DE FRANCE. *Rev.* An arm in plate issuing from a cloud on the right and holding a sword, to the blade of which is tied a wreath of olive and oak. Legend: NON SINE NUMINE. Size 8. A modern (1860-70) re-strike (like No. 48) from the original dies at the French Mint of a jetton of the department of the Constable and Marshal of France, *temp.* Louis XIV. (Feu., No. 1660; Font., p. 168.)

64.—*Ob.* Bust of the Dauphiness Anna Maria to right. Legend: ANNA MARIA CHRIST[INA] DELPHINA. *Rev.* A crown in the sky among clouds and stars; below is the earth. Legend: NOVVM DECVS ADDITA COELO. In Ex. MDCLXXXI. Size 7. Medalet-Jetton commemorating the marriage of this Bavarian Princess with Louis XIV's son, Louis the Dauphin, who died in 1711, *vita patris*. The bride is added as a new star to the heaven presided over by the sun, Louis XIV. (Feu., No. 11178.)

65.—*Ob.* Shield of the arms of Burgundy (1 and 4, France-ancient within a bordure compony argent and gules; 2 and 3, Burgundy ancient, bendy of six [wrongly shown] or and azure within a bordure gules), ensigned with a prince's crown of France; behind the shield is a stiff mantle of the same arms, the lining semy of lys. Legend: ESTATS DE BOVRGOGNE. *Rev.* Louis XIV, as Hercules, with lion's skin and club, standing on a battle-field strewn with corpses, cannon, etc. Legend: IL ASSEVRE MON REPOS. In Ex. MDCLXXXVIII. Size 9. Medalet-Jetton of the

- Estates of Burgundy:—‘En 1688,’ says Fontenay, p. 297, ‘la Bourgogne, qui commençait à respirer, représenta le roi sous les traits d’Hercule au repos.’ (Feu., No. 9821.)
- 66.—*Ob.* Three-quarter bust, to right, of the Dauphin Louis (b. 1661), son of Louis XIV, laureated and in lace-edged collar. Legend: GALLICUS DELPHINUS. *Rev.* A dolphin swimming to the left; above him the inscription J’AIME ET SUIS AIMÉ. Legend: CONRAD LAUFFE[R] RECH[EN] PFEN[ING] MACH[ER] IN NURNB[ERG]. Size 8. Gilt. German *jeton de pacotille* commemorating the prince named: c. 1674. The inscription on the *Rev.*, of course, suits the legendary character of the dolphin, the canting heraldic bearing of the Dauphins of France. (Feu., No. 11168.) For a similar piece by Wolf Lauffer see Loir, *Monnaies etc. de Mantes*, 1859, Pl. V, fig. 3; cp. Snel., Pl. V, 9.) [Pl. II, 4.]
- 67.—*Ob.* Bust of Louis XIV, to right, in periwig, armour, and steinkirk. Legend: LOVIS XIV ROY DE FR. ET DE NAV. *Rev.* A circular shield of France-modern, between crossed palm branches and ensigned with an arched crown. Legend: IOHANN WEIDINGERS RECHEN PF[ENING]. Size 9. *Jeton de pacotille* issued c. 1690 (?) by Johann Weidinger of Nuremberg. The *Rev.* follows a French coin type, one of those of the silver *écu* of the time.
- 68.—*Ob.* Bust of Louis XIV, to right, in periwig and toga. Legend: LVD. XIII D.G. FR. ET NAV. REX. *Rev.* A ‘square’ shield of France-modern ensigned with an arched crown. Legend: CORNELIVS LAVFFERS RECHEN PFEN[ING]. Size 7. *Jeton de pacotille* of c. 1680 (?), issued by another member of the Lauffer family of Nuremberg. The *Rev.* imitates one of the other types of the French silver *écu*.
- 69.—*Ob.* Similar to that of No. 67. The *Rev.* follows the same type of the French silver *écu* as No. 68. Legend: LAZA[RVS] GOTTL[IEB] LAVFFERS RECH[EN] PFENING. Size 8½. Jetton, c. 1675 (?), of the same character as the last two.
- 70.—*Ob.* Head of Louis XIV, to right, in periwig. Legend: LVD. XIII D.G. FR. E[T] NAV. REX. *Rev.* A cross formed of four lys, ensigned with an arched crown. Legend:

LAZ[ARVS] GOTT[IEB] LAVFFERS RECH[EN] PFEN[ING].  
Size 4. Jetton of the same class, maker, and date as No. 69. The Rev. type was suggested by that of the *lis d'or* of Louis XIV.

- 71.—*Ob.* Bust of Charles III of Spain, to right, in periwig, armour, bands, and collar of the Golden Fleece. Legend: CAROLVS III D.G. HISP[ANIARVM] ET INDIA[RVM] REX. *Rev.* View of the city and harbour of Barcelona. Legend: BARCELLONA GALL[IS] EREPTA. 1705. In Ex. FORTITER CONTRA EOSD[EM] DEFENSA. 1706. Size 6½. Medalet-Jetton commemorating the taking of Barcelona from the French in 1705, and its defence against them in the following year. The place of its manufacture is uncertain: probably this was either Nuremberg or Gotha. (Van Loon, V, 22, No. vi; Le Clerc, *Explication des Médailles des Provinces-Unies*, 1723, p. 176; Rapin, *Medals of Queen Anne*, III, 12; *M.I.B.H.*, II, 283, No. 89.)

- 72.—*Ob.* Young bust of Louis XV, to left, in laureated periwig, Roman armour, and scarf. Legend: LVD. XV D.G. FR. ET N. REX. *Rev.* The youthful king, as Apollo radiated, standing, bow in hand, after overcoming the Python, which lies dead at his feet. Legend: VIS ANIMI CUM CORPORE CRESCIT. Size 6½. Medalet-Jetton, probably struck at Nuremberg, following the type of the French medal of 1718. The Python presumably represents the Spanish Minister Alberoni. At the side of Apollo's head is a flaw. (See Fleurimont, *Médailles du Regne de Louis XV*, N.D., but soon after 1736, Pl. 10.)

- 73.—*Ob.* Head of Louis XV as a child, to right, with long hair and laureated. Legend: LVD. XV. D.G. FR. ET NAV. REX. *Rev.* France, trampling on the shield of arms of Fontarabia, offers an olive branch to Spain. Legend: PACIS FIRMANDAE EREPTUM PIGNUS. Size 7. Medalet-Jetton, probably of Nuremberg manufacture, following the type of the French medal of 1719 recording the capture of the town of Fontarabia, 16 June, in that year, in consequence of which peace was expected, as the *Rev.* legend tells us. The two figures are distinguished by their

shields: the arms on that of Fontarabia are only shown here conventionally. (Fleurimont, Pl. 13.)

- 74.—*Ob.* The arms (*azure, a fracted chevron between two mullets in chief and a cinquefoil in base argent*) of Étienne Baudinet, Mayor of Dijon, in an oval shield, set on a bracket ensigned with a French viscount's coronet and supported by unicorns. Legend: CUM VIRTUTE DIU STABIT HONOS. In Ex. 1727. *Rev.* The arms of the town of Dijon (*Per fess: in chief 1. Burgundy modern; 2. Burgundy-ancient; in base a field gules*) in a 'square' shield, between two branches of laurel, ensigned with an arched crown. Legend: VILLE DE DIJON. In Ex. M. BAUDINET VICOMTE MALEUR. Size 9. For the arms see No. 65. (Feu., No. 10090.) [Pl. II, 5.
- 75.—*Ob.* Young bust of Louis XV, to right, in toga and laureated periwig. Legend: LUD. XV D. G. FR. ET NA. REX. *Rev.* *Occasio* ('Opportunity'), or Fortune, wafted on her shell-boat over the sea, to the left, with a sail in her hands. In the distance are two ships, one afloat, the other sinking. Legend: DAS KLVCK KOMBT. V. OBEN. In the field to the left is RE[CHEN], to the right PF[ENING]. In Ex. I. C. H. Size 6. *Jeton de pacotille* made at Nuremberg by Johann Conrad Höger, in the early years of Louis XV. The *Rev.* type is common on counters. Good and evil fortune are symbolized by the two ships. A similar conceit appears on the title-page of Vossius' edition of *Justin* (Elzevir, Amsterdam, 1664), where on the right side of Fortune is a ship sailing and an evidently prosperous city, on the left a vessel in distress and a town in flames. This piece was probably intended for use in play as well as for keeping accounts, which no doubt was the case with many of these 18th century common counters. A jetton in my own collection, undated, but certainly not earlier than 1750, bears the legend *Nuernberger Spiel & Rechen-Pfennig*.
- 76.—*Ob.* Bust of Louis XV, to right, in toga and laureated periwig. Legend: LVD. XV. D.G. FR. ET. N. REX. *Rev.* The sun shining on three lillies growing from one root. Legend: ALBERICHT HOGER RECH[E]N PFEN[ING]. Size 4½.

Contemporary *jeton de pacotille* struck at Nuremberg by the maker named. The Rev. type is copied from a French jetton of 1682 commemorating the birth of Louis, Duke of Burgundy, son of Louis the Dauphin and grandson of Louis XIV, the three lillies representing these three princes. (*Cp.* Snel., Pl. V, 16.)

- 77.—*Ob.* Young bust of Louis XVI, to left, in tye-wig and military uniform with decorations. Legend: LVD. XVI D.G. FR. ET NAV. REX. On truncation of arm REICH. *Rev.* A fountain playing. Legend: OMNIBVS NON SIBI. In Ex. IETTON. Size 6. Contemporary *jeton de pacotille* struck at Nuremberg by Johann Christian Reich. The Rev. type and legend, appropriate to the head of a state, are copied from earlier pieces.
- 78.—*Ob.* Similar to that of No. 77, but much better work. Below the bust is R. *Rev.* An infant seated on a dolphin, which is swimming to the left in a calm sea; in his left hand the child holds a lily (?) In Ex. a double festoon. Legend: FELICITAS PUBLICA. Size 6. *Jeton de pacotille* by the maker of the preceding counter. The type and legend of the Rev. suggest that the birth of the Dauphin Louis Joseph in 1785 is commemorated. The Rev. legend is borrowed from the Roman coinage, on which it is common from Vespasian to Valerian I, *e.g.* Stevenson, p. 854.
- 79.—*Ob.* Bust of Louis XVI, to right, in laureated periwig and armour. Legend: LUD. XVI D.G. FR. ET NAV. REX. *Rev.* The sun shining upon an orange-tree in a box; in the foreground a horse gallops, in the distance is a town. Legend: PRIVO [DI TE] MORIRO. In Ex. I.C.R., in brackets, dividing RE[CHEN] PF[ENING]. Size 4½. *Jeton de pacotille* made at Nuremberg by Johann Christian Reich, *temp.* Louis XVI. The Rev. is copied from certain French jettons ranging in date from 1500 to 1725, and seems to have become popular: see, *e.g.*, Florange, *Armorial du Jetonophile*, 1902-7, I, 110; II, 153; and Feu Nos. 6031, 8666, 8670, 11099. In the original pieces the sun is bursting through clouds, and the *di te*, also omitted in this rudely executed little counter, appears in the legend.
- 80.—*Ob.* Bust of Louis XVI, to right, in toga and laureated periwig. Legend: LVD. XVI D.G. FR. & N. R. *Rev.* A

ship, to left, on a calm sea. Legend: ALB[ERICH]T HÖGER RECH[EN] PFENIG. Size  $4\frac{1}{2}$ . Contemporary *jeton de pacotille* struck at Nuremberg by the maker named. The ship on the Rev. is perhaps that from the arms of Paris, perhaps merely a symbol of commerce. (Cp. Snel., Pl. V, 15.)

81.—Ob. A man, facing, seated at a cloth-covered table on which are jettons. The field of the coin is conventionally filled with other jettons. Mute. Rev. The alphabet in five lines; below the last 1533. Size  $7\frac{1}{2}$ . German *jeton de pacotille* made for use anywhere. The Ob. type shows a *Rechen-meister* sitting at his *Rechen-brett* (or *Rechen-tafel*) with his *Rechen-pfennigen* before him. On some pieces of this series the word *Rechen-meister* appears as a legend, and the lines, on which and between which to place the counters, are shown on the table. The Rev. type of an alphabet, which is regularly found on this class of jetton, perhaps represents a horn-book; this would suggest that possibly we have here a teacher of reckoning and reading. (For jettons on which the *comptoir* or counting-board appear see Feu., Nos. 194, 195, 1772, 3835, 3841-51, 10149; Font., p. 137; Piton, *Les Lombards en France*, 1892-3, I, 55, 83, II, 31, 58, 63, 66, 89; La Tour, pp. 146, 182; Van Mieris, *Histori de Nederlandsche Vorsten*, 1732, I, 261, II, 330; Dugniolle, Nos. 732, 744, 1233, 3997, 4098; Nagl, *Die Rechenpfennige und die Operative Arithmetik*, Vienna, 1888, Pl. III, fig. 50; Snel., Pl. III, 13, 14.) [Pl. II, 6.]

82.—Ob. A variant of No. 81. Undated, but of the same period. On the Ob. more jettons are shown upon the table, as is the bag in which they were kept and an account-book. The conventional jettons are absent from the field of the coin, and a tressure-like ornament occupies the spaces right and left of the *Rechen-meister*. Size 7. These, and the succeeding Classical, Allegorical, Political, and Biblical types of *jetons bancaux* (Nos. 84-101) must have been in common use here in Shakespeare's time, and it was doubtless such pieces that are referred to in *As You Like It*,



II, vii, 63; *Cymbeline*, V, iv. 174; *J. Caesar*, IV, iii, 80; *Troilus*, II, ii, 28; *Winter's Tale*, IV, iii, 38; *Othello*, I, i, 31. As to the bag shown here, it was in bags or purses that counters were usually kept in France. (See Affry, *Appendices, passim.*) An example of these in England will be found in *Archaeologia*, XXXVI, 290, 292. Sometimes boxes were used: *e.g.* 'silver boxes for compters . . . and fourtie compters' formed part of a New Year's gift to Queen Mary in 1556. (Nichol, *Illustrations of Manners of Antient Times*, 1797, *fn.*) Or the jettons might be kept in a bowl: 'Item a standishe for count[e]rs.' (Inventory of La Mountroy College Wells, 17 March, 1546. *Inventories of Chantries in Somersets. Record Office: Exch. Q. R. Church Goods.* 1545 b. Evidences at the Munich Museum show that a basin was used in Germany. Occasionally the reckoning-table was furnished with a till for the purpose, as in the St. Gall board at Nuremberg. In the Low Countries cylindrical cases were the general fashion. (Van Loon, *Inleiding tot de Heedendaagsche Penningkunde*, 1717, Pl. p. 62. Affry, *Introd.* xviii.)

83.—*Ob.* Hercules and Pallas standing side by side, with their attributes. The latter is about to place a wreath on the head of the former in acknowledgment of his fetching the golden apples of the Hesperides. On the top of a column to the right is one of the apples dedicated as booty by Hercules to Pallas. Legend: HERCVLES ET PALLAS. In Ex. H.K. *Rev.* Neptune, trident in hand, borne over the sea on a dolphin; in the distance a ship sailing. Legend: NEPTVNVS. Size 8. *Jeton de pacotille* made at Nuremberg by Hans Krauwinckel. One of a series with types taken from Classical Mythology, issued during the last quarter of the 16th and the early years of the 17th century, and still often found in England. Some of the groups in this series were taken from gems. For Neptune on a dolphin *cp.* Raspe, *Catalogue of Gems*, 1791, I, Nos. 2556, 2567. (Snel., Pl. IV, 8.)

84.—*Ob.* Minerva, standing, with spear and aegis, attended by a

- lion and a boar. Legend: FRANGIT ET ATOLLIT. *Rev.* Procris, with her spear and dog, giving the latter to Cephalus. Legend: CEPHALVS. PROCRIS. In Ex. H.K. Size 8. *Jeton Banal* of the same series as No. 83. The Ob. legend is from Propertius, V, vi, 51, 'It is the cause that weakens or raises courage.' (Snel., Pl. IV, 16.) [Pl. II, 8.
- 85.—*Ob.* Meleager giving to Atalanta the head of the Calydonian boar, the carcase of which lies at their feet. Legend: MELIAGER[sic]. *Rev.* Apollo and Diana, standing, the former radiated and with his lyre, the latter with spear, bow, quiver, and hound. Legend: APOLLO DIANA. In Ex. H.K. Size 8. *Jeton Banal* of the same series as Nos. 83 and 84. (Snel., Pl. IV, 13.)
- 86.—*Ob.* Pluto, standing, with his staff in his left hand and Cerberus sitting by his right side. Legend: PLVTANVS. By his left foot is H.K. In Ex. 1582. *Rev.* Fortune, seated on her wheel, with Saturn, or Time, horned, bearded, winged, and goat-legged, bound and padlocked, in a leash before her; she holds his scythe in her left hand. Sun-rays burst through clouds on the right. Legend: FORTVNA VARIABILIS. In Ex. H.K. Size 7½. Gilt. *Jeton Banal* of the same series as Nos. 83 to 85. For Saturn chained, *cp.* Raspe, No. 760. (Snel., Pl. IV, 15.)
- 87.—*Ob.* Pyramus and Thisbe sitting under a mulberry tree, the former wreathed and playing on a guitar, the latter holding up a mulberry in her right hand. Legend: QVID SVAVIS [blundered for *suavius*] AMORE. *Rev.* Thisbe throwing herself on a sword by the corpse of Pyramus. Legend: WOLF LAVFER IN NURNBERG. Size 8. *Jeton Banal* of the same character as Nos. 83 to 86 by another maker, as indicated in the *Rev.* legend. For the Ob. legend *cp.* Plautus, *Cistellaria*, I, iii, 45: *qui est amor suavissimus*. The *Rev.* type is perhaps copied from that of several Medalet-Jettons struck at Utrecht in 1574 with reference to the troubles suffered by the town that year: see Van Loon, I, 184-5. [Pl. II, 7.
- 88.—*Ob.* Romulus and Remus suckled by the wolf. Legend: REMVS ET ROMVLVS. In Ex. H.K. *Rev.* Faustulus

bringing the twins to his wife Laurentia; his dog runs beside him. Legend: REMVS ET REMVLVS[sic]. In Ex. 1601. H.K. in two lines. Size 8. *Jeton Banal*: one of Hans Krauwinckel's Nuremberg series of subjects from Roman History. The Ob. type appears on many Roman coins: see, e.g., Stevenson, pp. 232, 529, 914, etc. [Pl. II, 9.]

89.—Ob. Romulus killing Remus. Legend: REMVS ET ROMVLVS. In Ex. 1601. Rev. Samuel crowning David. Legend: SAMVEL ET DAVID. In Ex. H.K. Size 8. Another of H. Krauwinckel's *jetons banaux*, but a mule, the Ob. being Classical, the Rev. Biblical. [Pl. II, 10.]

90.—Ob. Marcus Curtius, on horseback, leaping into a fiery chasm. Legend: MARCVS CVRTIVS. In Ex. 1601. Rev. The Consul Popillius Laenas, on the left, as ambassador to Antiochus, on the right; both figures standing, the latter with the circle drawn round him by the rod of Popillius. Legend: POPILIVS ROMAN[VS] LEGAT[VS] VIRGA REG[EM] ANTI[OCHVM] CIRC[VMSCRIBIT]. In Ex. H.K. Size 8. *Jeton Banal* of the same series as No. 88. For the Ob. type, cp. Montfaucon, II, Pl. 32, xviii. The Rev. legend is based on Livy, XLV, 12, *Popillius virga circumscriptis regem*. (Snel., Pl. IV, 21.) [Pl. II, 11.]

91.—Ob. Minerva, standing, helmeted, with spear and aegis. Legend: QVOS VVLT MINERVA BEAT. Rev. Two soldiers, standing, the one on the left holding up a sprig of laurel, the other addressing him; laurels growing in the ground by them. Legend: CONCEDAT LAVREA LINGVAE. In Ex. H.K. *Jeton Banal* by Hans Krauwinckel of Nuremberg: classical type. The Rev. legend is from Cic., *De Officiis*, I, xxii, 77. It appears also in this period on the Rev. of a medal of Pierre Vettori, of Florence, dated 1580, where Minerva and Neptune are discussing what name to give to Athens. (Durand, *Médailles et Jetons des Numismates*, 1865, p. 211.)

92.—Ob. Corn springing from the bones of men slain in war. Legend: SPES ALTERA VITAE. In Ex. C.K. Rev. Similar to that of No. 91, but here the warrior on the right has

the laurel in his hand, while he on the left is the speaker; on the ground between them is body-armour and a sword laid aside. Size  $7\frac{1}{2}$ . This allegorical piece is by Chilianus Koch of Nuremberg, c. 1570-90.

93.—*Ob.* A pseudo-classical warrior, standing to right, with a tilting (!) spear in his hand. Legend: NEC IGNI NEC FERRO CEDO. *Rev.* A unicorn, presumably stirring water with his horn. Legend: NIHIL INEXPLORATO. Size 8. *Jeton Banal* made at Nuremberg: late 16th century. The unicorn type is perhaps taken from the 13th Emblem of Camerarius, 1595; cp. Reusner's *Emblems*, 1581, No. 4. It refers, of course, to the belief that wild beasts would not drink from pools till the unicorn had stirred them with his horn, the antidote to every poison, and so driven away all venomous reptiles. (See, e.g., Guillim, *Display of Heraldry*, 1724, p. 163; and the *Bestiaries*, *passim*.) The faces of this coin respectively inculcate courage and caution. [Pl. II, 12.]

94.—*Ob.* A tortoise, on the ground, fitted with a mast and sail. Legend: FESTINA LENTE. In Ex. WOLF LAVFER RECH: PE: *Rev.* Hercules carrying on his shoulders the Cretan bull. Legend: ASSIDVITATE ET TOLERANTIA. Size 8. *Jeton Banal* issued at Nuremberg by the maker named: late 16th century. The type of the *Ob.* was the device of Cosmo dei Medici, 1st Grand Duke of Tuscany, d. 1574. For the motto *Festina lente* (σπεῦδε βραδέως) cp. Suet., *Aug.*, 25; and A. Gellius, XII.

95.—*Ob.* A hand issuing from clouds, on the right, holds a sword in front of the Tables of the Law. Legend: LEX REGIT ARMA TUEN[T]VR. (The last word is blundered.) *Rev.* Valour, represented as a bearded and helmeted warrior with spear and parazonium, standing on the left, facing Honour, personified as a female, standing on a dolphin, with a cornucopias in her right, and a spear in her left hand. Legend: HONOS ET VIRTUS. In Ex. H.K. Size  $7\frac{1}{2}$ . Another *Jeton Banal* by Hans Krauwinkel of Nuremberg. On the *Ob.* the *gladius Domini* is guarding the Law. The *Rev.*, which offers an unusual presentment

- of the two divinities named, is based on that of a 1st Brass of Galba: see Stevenson, p. 465; Montfaucon, I, Pl. 94, ix; Addison, *Dialogues upon Ancient Medals*, 1753, p. 36.
- 96.—*Ob.* Haman on foot and Mardocheus mounted. Legend: HAMAN MARDOCHE<sup>9</sup>. In Ex. ESTHER VI above crossed laurel branches, below which is H.K. *Rev.* A street of the city; Haman hanging on a high gallows. In Ex. DAS HAVS HAMAN in two lines. Size 8. One of a Biblical series of *jetons banaux* issued by H. Krauwinckel of Nuremberg. (Snel., Pl. IV, 1.) [Pl. II, 13.]
- 97.—*Ob.* The Scarlet Woman on the Beast; John and the angel to the right. Legend: MERETRIX BA[BYLONIS]. In Ex. APOCALIPS[IS]: CAP: XVII. H.K. in three lines. *Rev.* Fictitious arms of Babylon (*Three open crowns, each surmounted by an elephant*) in a 'German' shield ensigned with a large open crown. Legend: INSIGNI[A] CIVIT[ATIS] BABIL[ONIS]. Size 8. Another piece of the same series as the preceding. For the term 'German shield' see Grazebrook, *Dates of Shields*, 1890, Pl. I, p. 10. [Pl. II, 14.]
- 98.—*Ob.* Equestrian figure of the Emperor Charles V, to right, bareheaded (as Caesar: *cp.* Nos. 24, 27, 41), and with a commander's baton in his hand (*cp.* Nos. 24, 41). Legend: CAROLVS V ROM[ANORVM] IMP[ERATOR] SEM[PER] A[VGVSTVS]. In Ex. H.K. *Rev.* A shield of Austria-ancient (see No. 42) impaling Burgundy-ancient (wrongly shown: see No. 65), displayed on the breast of the double-headed eagle of the Empire with the *heiligenscheine* round each head ensigned with an arched crown; the whole between two columns, each sustaining an open crown. On scrolls just above the plinths are PLVS and VLTRA. Legend: VENI VIDI DEVS VICIT. Size 7½. *Jeton Banal* of a political or historical series issued by Hans Krauwinckel of Nuremberg. For the Columns of Hercules and the motto on the *Rev.* see No. 15. The model for this *Rev.* type is perhaps to be found in Charles V's medal of 1548; see Van Mieris, III, 208; and *cp.* the *Impresse* of this Emperor in *Le Sententiose*

*Imprese* of Symeoni, 1560, given in Green and Croston's Edn. of *The Mirrovr of Maiestie*, Holbein Society, 1870, Pl. 28. (Snel., Pl. IV, 22.)

- 99.—*Ob.* The Emperor (Rodolph II, 1576-1612) as King of Germany, enthroned under a canopy, between Justice and Peace with their attributes. In *Ex.* REX GER[MANIAE]. *Rev.* A 'German' shield bearing a single-headed eagle displayed, with the *heilighenscheine* round its head, surmounted by a crowned helm with mound and cross as crest and with scroll-mantling. Legend: INSIGNI[A] ROM[ANA] REGIS GERMI [blundered for *Germaniae*]. Size 7½. Contemporary *Jeton Banal* similar in character to No. 98, and of Nuremberg make. The eagle on the *Rev.* should have been double-headed, as after the adoption of the latter by Sigismund (1411-37), the single-headed eagle was the distinctive bearing of the King of the Romans until he became Emperor.
- 100.—*Ob.* The King of Bohemia (The Emperor Rudolph II again) standing in robes of state with sceptre and orb, under a canopy, and flanked by cornucopiae and laurels. Legend: REX BOHE[MIAE]. *Rev.* A 'German' shield of the arms of Bohemia (*gules, a lion rampant double queued argent*) with crowned helm, double-wing crest, and scroll mantling. Legend: INSIGNIA REGIS BOEMI[AE]. Size 8. Contemporary *Jeton Banal* of the same class as No. 99, and by a Nuremberg maker. For this same crest two centuries earlier see *L'Armorial du Heraut Gueldre*, No. 323.
- 101.—*Ob.* Equestrian figure of the Sultan of Turkey, to left, in turban and long robe. Legend: TURCKICHS [blundered for *Turckisch*] KEISER. In *Ex.* H.K. *Rev.* A quartered shield of arms, ensigned with an open crown: 1 and 4, 2 pales, on a chief as many open crowns; 2 and 3, an open crown. Legend: INSIGNIS [blundered for *Insignia*] CIVIT[ATIS] CONSTANT[INOPOLIS]. *Jeton Banal*, by Hans Krauwinckel of Nuremberg, of a similar character to Nos. 98-100. (Snel., Pl. IV, 23.)
- 102.—*Ob.* Three crowns and three lys arranged alternately round a rose (P) Legend: HANNS KRAUWINCKEL IN NVRENB[ERG].

*Rev.* The *Reichs-apfel* (mound, or orb) within a double tressure of three curves and three angles set alternately. Legend: GETRIVW HANDT KOMBT DURCH ALL. Size 6½. *Jeton Banal* of the latter part of the 16th century, still commonly found in England, by the maker named. The same type of piece was issued by some of the other die-sinkers in Nuremberg (*e.g.* Nos. 104-5), first apparently by George Schultes, one of whose in my collection is dated 1553 (Font., p. 48.). The *Rev.* type is copied from the Rhenish gold gulden. It has been suggested that the origin of this form of tressure is to be found either in a succession of three Omegas or in a combination of three open Alphas and three Omegas. (Snel., Pl. III, 25 *et. seq.*) [Pl. II, 15.

- 103.—As No. 102 in type. The *Ob.* legend reads NVR. The *Rev.* legend is GOTTES GABEN SOL MANLOB. Size 5½. [An *Ob.* of this type by Cornelius Laufer is shown in Pl. II, 16.
- 104.—The type is as Nos. 102 and 103. The *Ob.* legend is WOLF LAVFER IN NVREMBERG RECH P. The *Rev.* reads ANFANG BEDENKS ENDT. Size 5.
- 105.—The type is as Nos. 102-4. The *Ob.* legend is WVLF LAVER IN NVREMBERG. The *Rev.* reads GOTES SEGEN IST ALESC. Size 5.
- 106.—*Ob.* Bust of Mercury, to right, in toga and *petasus*. Legend: GLIK KUMPT VON GOT ISTWA. *Rev.* As that of Nos. 102-5. Legend: HANS SCHVLTES ZV NVRENB[ERG]. Size 5½. *Jeton Banal*, for general use, by the maker named; of the second half of the 16th century, but the type may have been perpetuated for some time after 1600. The reason for the presentment of Mercury on a coin for keeping business accounts is obvious. (Snel., Pl. III, 30.)
- 107.—*Ob.* The doge of Venice and his wife, walking to the right, the latter holding a fan. Legend: DVX VENET[IAE] ET DVXIS[SA]. *Rev.* Within a wreath of lys (?) the winged lion of St. Mark, sejant, holding an open Bible, in which is inscribed PAX TIBI MARCO. H.K. Size 8. *Jeton Banal* issued by Hans Krauwinckel of Nuremberg, *c.* 1600, for general use, but perhaps in the first instance for Venice, as its type suggests. King, in his *Engraved Gems* (1885,

p. 96), considers that 'the Winged Lion of Venice was the device beyond all others the one for a merchant's signet,' and, in his opinion, this is the reason why it is found on these Nuremberg counters. Piton, I, 53, gives an illustration of the 14th century seal of a Venetian *bailli* at Tripoli bearing this emblem. [Pl. II, 17.

- 108.—*Ob.* A column, on the top of which is a statue representing the Inquisition. To the foot of the column the Belgic Lion is fastened, the collar round his neck bearing the inscription INQVI[SITIO]. A mouse, the Prince of Orange, is gnawing his bonds to free him. Legend: ROSIS LEON[E]M LORIS MVS LIBERAT. *Rev.* The Pope and the King of Spain (Gregory XIII and Philip II), standing; in front of them rears the Belgic Lion. The King with one hand offers the Lion an olive branch, in token of peace, but holds in the other behind his back the collar of the Inquisition. Legend: LIBER REVINCIRI LEO PERNEGAT. Size 8. *Jeton Banal* made in Germany in imitation of a Medalet-Jetton issued in the Low Countries in 1580. (Dugniolle, No. 2800; Van Loon, I, 274; Bizot, *Histoire Métallique de Hollande*, 1687, p. 42; Font., p. 154.) Our illustration is taken from the original Dutch piece. [Pl. II, 18.
- 109.—*Ob.* A landscape, with buildings indicating various occupations, and men working at a pump or well; in the foreground rises a tall pine-tree, at the foot of which two cornuacopiae shed their contents upon the ground. Legend: IN MULTIS FERTILIS. *Rev.* A pair of empty scales equally poised by a right hand issuing from a cloud. Legend: PONDERE VIRTUTIS LIBRANDA NEGOTIA CUNCTA. Size 8. Flemish Medalet-Jetton commemorating the final cession of Cambray to France in 1678. The *Ob.* apparently is symbolic of prosperity; the *Rev.* of justice. (Dugniolle, No. 4403; Van Orden, No. 1358; *cp.* Addison, p. 195.) Red metal is a characteristic of the counters of the Low Countries. [Pl. II, 19.
- 110.—*Ob.* Shield of arms, with helm, crest, and mantling, of Jean Heymans. Mute. *Rev.* The double-headed eagle of the



Empire, bearing on its breast a shield of Austria-ancient, and holding in one beak a chaplet, in the other an olive branch, in one claw a sword, in the other a crescent. Legend: VNA FERIT LVNAM VICTRIX FERIT ALTERA PACEM. Size 9. Medalet-Jetton, probably of the year 1687, referring to the war against the Turks, to which the additional symbols and the legend on the Rev. allude. According to Van Loon the arms on the Ob. are those of Pierre Ferdinand Rose, councillor of Brussels. (Dugniolle, No. 4436, and *cp.* 4405, Notes 2, 3; Van Loon, III, 299, and *Inleiding &c.*, p. 179; Van Orden, *Nederlandsche Historie-penningen*, 1825-30, No. 1369.)

- 111.—*Ob.* Shield of the arms of Saxony: ten quarterings. *Mute.* *Rev.* The field is occupied by an inscription and date, in six lines:—OMNIA | CONANDO | DOCILIS SO|LERTIA VIN|CIT :  
| 1582. Size 7. No. 8580 in Neumann's *Beschreibung der bekanntesten Kupfermünzen*, 1858-72. German Jetton. Neumann merely describes this piece and gives no information about it. The hexameter on the Rev., however, is from Manilius, *Astronomica*, I, 95.
- 112.—*Ob.* A starving, dishevelled, and tattered man, eating with his left hand and holding bones in his right. Legend: EGO MAGIS MIHI QVAM ALIIS NOCEO. *Rev.* A 'German' shield of arms with Saxon quarterings:—(1) an escarbuncle; (2) a lion rampant sinister; (3) a single-headed eagle displayed; (4) 2 pales; over all an escutcheon of Saxony (Barry of ten, or and sable, a crancelin vert.); ensigned with a large open crown, of fanciful design to match the shield. The shield divides the letters G. A. S. H. and the date 1621. No legend. Size 7½. German Medalet-Jetton. Not in Neumann. The quarterings shown here were borne by several of the branches of the Ducal House of Saxony. If they represent the coat of Saxe-Lauenburg, Prince-bishop of Paderborn, an explanation of this jetton suggests itself, but is offered merely as a conjecture. 1621 was the year of the ravages of the Protestant leader Christian of Brunswick in the diocese of Paderborn during the Thirty Years' War, and the piece may be a *Hungersnöthe médaille* referring to the famine thus caused. In

that case the Ob. legend perhaps points to the sufferings of the invaders from the effects of their own devastation. On this class of piece see L. Pfeiffer, *Pestilentia in Nummis*, Tübingen, 1882. (On the other hand, the letters G. A. S. H., naturally suggest *Gustavus Adolphus Sueviae Heros*, but the date seems too early either for this or for a Protestant Saxon medalet.)

- 113.—*Ob.* Shield of Arms of Pfeffer, with coroneted helm, crest, and scroll mantling. Legend: J. A. PFEFFER COM. M. M. z. z. 1766. *Rev.* Two men working in a mine, from the roof of which hangs a lamp; in the background is a landscape with buildings. Legend: INDICANT ALTISSIMUM PROFVNDAM. Size 7. Jetton of Johann Anton Pfeffer, coin-master of the Gild (*Communion-Münzmeister*) from 1763 to 1773. The pepper-tree in the arms on the Ob. forms a canting coat on the name of the bearer: *cp.* Spener, *Insignium Theoria*, 1690, Pl. 16. The mine on the *Rev.* is, of course, an appropriate symbol. (Neumann, 31765.)
- 114.—*Ob.* Bust of Augustus, to left, with radiated crown. Legend: C[AI] CAESAR[IS] DIVI [FILIVS] AVGVSTVS IMPE[RATOR]. *Rev.* On a round-based shield, between laurel branches and ensigned with an open crown, a bend sinister charged with the letters S P Q R. Legend: INSIGNIA CIVITATIS ROM[ANAE]. Size 8. *Jeton Banal*, probably of German make, and one of a series of such pieces apparently issued late in the 17th century. Most of them are distorted imitations of ancient Roman money; this example, however, combines an Ob. of that character with a *Rev.* apparently suggested by the silver *Grosso* of the mediaeval Roman republic: 11th to 13th century.
- 115.—*Ob.* Bust of Domitian, to right, laureated. Legend: IMP[ERATOR] CAES[AR] DOMIT[IANVS] AVG[VSTVS] GER[MANICVS] CO[N]S[VL] XII CE[NSOR] PER[PETVVS] P[ATER] P[ATRIAE]. Below the bust 12. *Rev.* A lighted altar (*ara salutis Augusti*). Legend: SALVTI AVGVSTI. In Ex. s.c. Size 8. A jetton of the same series as No. 114, but of better execution and in character a more faithful imitation. (*Cp.* Stevenson, p. 73.)
- 116.—*Ob.* Bust of Anna, Empress of Russia, to right, crowned.

Legend: ANNA D. G. RVSSOR[VM] IMPERAT[RIX]. *Rev.* The Empress enthroned, with the shield of Russia by her side; she is crowned by Victory, and vanquished enemies make obeisance and offerings to her. Legend: DONAT VICTORIA TANTA. In Ex. I. I. D. RE. PF. Size 7. Contemporary *Jeton Banal* made at Nuremberg by Johann Jacob Dietzel. The *Rev.* commemorates the Russian victories of 1739.

- 117.—*Ob.* Bust of Charles II of England, to right, with long hair, laureated and wearing the toga. Legend: CAROLVS II D.G. MAG. BR. FRA. ET HIB. REX. *Rev.* The shield of Great Britain ensigned with an arched crown; the marshalling being (1) England, (2) Scotland, (3) France, (4) Ireland, an irregularity due no doubt to avoid crowding. The arrangement should have been 1 and 4 grand quarters, France-modern and England quarterly; 2 Scotland; 3 Ireland. Legend: COUNTERS CONR[AD] LAUFERS RECH[EN] PFENING. Size 8. Contemporary *Jeton Banal* issued at Nuremberg by the maker named. The portrait of the King apparently was copied from that on his milled silver coins, first issued in 1662. (*Cp. M.I.B.H.*, I, p. 494, No. 121.) [Pl. II, 20.
- 118.—*Ob.* Bust of William III of England, to right, in laureated periwig and toga. Legend: WILH[ELMVS] III D.G. ANG. SCO. FR. ET HI. REX. Below the bust L. G. L. RECHEN PF[ENING]. *Rev.* Bust of Mary II, to right. Legend: MARIA D.G. ANG. SCO. FR. ET HI. REGINA. Size 8. *Jeton Banal* made at Nuremberg by Lazarus Gottlieb Laufer in 1689. (*Cp. M.I.B.H.*, I, p. 692, No. 86.)
- 119.—*Ob.* and *Rev.* types and legends as those of No. 118, except that the *Rev.* legend has so., blundered for sc., and ET is shortened to E. The maker's name, etc., is on the *Rev.*, and reads L.G.L. R[ECHEN PFENING]. Size 5½. In character and date as the preceding piece.
- 120.—*Ob.* Bust of George I. of England, to right, in armour and laureated periwig. Legend: GEORGIVS M. BR. FR. ET HIB. REX. Below the bust L. *Rev.* Equestrian figure of St. George, to left, slaying the Dragon. Legend: FIDEI

DEFENSOR ET AEQVI. Size  $6\frac{1}{2}$ . Gilt. Medalet-Jetton made at Nuremberg by Johann Gottlieb Lauffer in imitation of one of the Coronation Medals of George I (31 Oct., 1714). The explanation of the Rev. type and legend is that the King, as St. George of England, slays the Dragon of Popery and uncontrolled Prerogative, *i.e.* the Jacobite party. (*M.I.B.H.*, II, p. 425, No. 13.)

This piece is by no means to be regarded, owing to its date and character, as necessarily being merely a counter for play; for though it might be difficult to prove that any general use of the Jetton in keeping accounts lingered on in this country so late as 1714, except in the special instance referred to below, there seems no doubt that on the Continent its more serious and original purpose, though dying out, survived, at least in France and Germany, throughout the 18th century, and our little medalet-counter, No. 120, may well have been one of a set popular in George I's German dominions; for a generation later the *Rechen-pfenning* and *Rechen-brett* had not yet fallen into desuetude in Germany. From Bettina von Arnim's *Goethe's Briefwechsel mit einem Kinde* (Berlin, 1837, Pt. 2, p. 250), we learn that a *zahl-brett* with its *zahl-pfenningen* existed in Goethe's paternal home in the fifties of the 18th century. For Goethe, as a child of seven, "no toy held so much fascination as his father's reckoning-board, on which he copied with the counters the position of the stars; and he would place the board by his bed, and so believe himself to be brought more immediately under the influence of his favourable stars."

The English Exchequer Table and its late survival, apparently on ceremonial occasions, has been discussed by Mr. Hubert Hall in his *Antiquities of the Exchequer* and elsewhere; as to which it may be added here that Snelling, in his Preface, speaks of the process as being still in annual use at the Exchequer at the time of his writing (1769), and that Daines Barrington, in *Archaeologia*, IX, 28 (10 May, 1787) states that it had then been discarded there about two years.

Even this little list testifies to the extraordinary variety of interest and wealth of allusion possessed by the Jetton; and I may perhaps be forgiven for having abandoned the task which I once set myself of describing on a similar scale the 7,000 specimens already in my cabinets. The Jetton may be considered both in its medalllic and in its arithmetical aspect: the former has received the more attention from modern scholars. In France, especially, it has been much studied from the numismatic point of view. References to the counter in each of its senses, of counting-board and counting piece, are numerous in literature, as well as in wills, inventories, and other records, from the 13th to the 18th century inclusive; and such allusions would doubtless be more common still, were it not that, to paraphrase the words of Vegetius,\* men leave unmentioned what in their day is universally known and of too ordinary a character to call for notice. There exist, moreover, a number of works dealing with the processes of ocular arithmetic, from those of Huswirt, Reisch, Siliceus, Cusanus, and Köbel, in the later years of the 15th and early years of the 16th centuries, down to the last edition of Legendre in 1753, itself† a proof of the continuance of the method, and which shows how the lined and spaced board, or cloth, could be dispensed with and the Jetton used alone by means of what was called the Tree of Numeration, a variety of procedure explained by Trenchant nearly two centuries before, and known in the 15th century, as is seen from the *Liure des Getz*. I hope presently to give some account of the *Comptoir*, or Counting-board, and of the Reckoning-cloth, on which the Jetton was used, and of both of which a few examples remain in Continental Museums.

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\* I, viii.

† Apart from the statement of the author: p. 497.

## SECOND INTERIM REPORT ON THE EXCAVATIONS AT SAKJE-GEUZI IN NORTH SYRIA, 1911

WITH PLATES III, IV, V.

BY JOHN GARSTANG

### PRELIMINARY

In the first volume of this Journal, 1908, p. 97 *et seqq.*, we gave a preliminary report of the results of the experimental excavations made by us in that year in the mounds of Sakje-Geuzi, Turkey in Asia. The importance of the results then obtained led to the formation of a standing Hittite Excavation Committee, with Mr. Robert Mond, M.A., as hon. treasurer, which includes, amongst its members, also:—Ralph Brocklebank, Esq., J.P., the Right Hon. Sir John Brunner, Bart., Freiherr von Bissing (Munich), Rev. W. Macgregor, M.A., Claude G. Montefiore, Esq., C. Sydney Jones, Esq., Sir Edwin Pears (Constantinople), Major E. Rhodes, D.S.O., Rev. Professor Sayce, D.Litt., Dr. Waldemar Schmidt (Copenhagen), James Smith, Esq., Henry S. Wellcome, Esq.

The Committee determined that it was desirable to continue, and so far as possible complete, the excavations. Accordingly, last year a new Expedition was equipped, the expenses of which were largely borne by the members of the Committee. Two student members of the party, Mr. Hamilton Beattie and Mr. W. J. Pythian Adams, also made a generous contribution towards the funds. As on previous occasions the expedition had the advantage of the voluntary and able services of Dr. Arthur Wilkin, to whom the members of the staff are personally much indebted. The photography and artistic work was again in the skilled hands of Herr Schliephack in his capacity as chief assistant. Mr. R. Horsfall, who had gained previous experience of excavation at Meroë, completed the party.

Our special gratitude is due to Mr. Robert Mond, both for his generous contributions towards the funds required, which proved for local reasons to exceed considerably the original estimates, and

for his valuable advice and assistance in the progress of the work and in the details of equipment. At his suggestion, we employed an aerial railway, which has proved a great saving of labour. The machine was designed and made for us at cost price by B. White and Sons, of Widnes.

In Constantinople, Sir Edwin Pears gave us his never-failing help in the negotiations with the Ottoman Government. In this connection the Secretary for Foreign Affairs lent his support, so far as diplomatically possible, and thanks to his good offices, His Britannic Majesty's Ambassador at Constantinople, and Consuls at Adana, Alexandretta and Aleppo, gave unflagging attention to our requirements. This official interest was particularly helpful during the time of tension on all hands that followed the outbreak of the Turco-Italian War. We cannot express too highly our appreciation of the consideration extended to us by H.E. Halil Bey, Director of the Imperial Ottoman Museum, and by the Governors of the provinces of Adana and of Aleppo.

The conditions of work were much the same as on the previous occasion. To avoid the intense heat of August, we made our plans to arrive at the beginning of September, and enjoyed the delightful weather of the Syrian autumn, until towards the close of our stay at the end of November. We were also able to secure, at this season, an adequate number of labourers, partly from the locality, chiefly Kurds and Armenians, partly Circassians from villages in the plain, and some Armenians from Marash. We owe an irredeemable debt to the Rev. Dr. E. Merrill, of Aintab, and the Rev. Dr. F. Goodsell, of Marash, who gave us their unfailing help, sympathy, and service throughout.

#### *Summary of previous results*

For description of the site and physical geography of the district, see Vol. I, pages 98-100. The mounds, as may be seen from the plan there reproduced (Plate 33, Vol. I), are arranged roughly in a circle around that which is marked *A*. The largest of all, lettered *B*, is called Songrus Eyuk, a name possibly derived from its conspicuous size. It was in this that our work was begun on the present occasion, having on the last visit tested its character by trial trenches, and disclosed signs of ancient building. In

mound *C*, Kefridiz Eyuk, we had also found a well-built wall of Hittite character, presumably the main defence of the Acropolis. But it was in mound *A*, Jobba Eyuk, that our work, on that occasion, was chiefly concentrated. In this one, we had picked up here and there the general line of an outer defensive wall, and in particular had laid bare, towards the north-eastern corner of the enclosure, a palace portico, ornamented with an exceptionally fine series of Hittite sculptures, which included splendid examples of the familiar Lion Corner Stones, followed by processions of mythological creatures, as well as the figures of the King-Priest and his attendants. Facsimile reproductions of these from paper-moulds, the work of Mr. Schliephack, are now being set up in the new Hittite gallery of the Liverpool Public Museums.

This small mound was readily accessible, for since Hittite times only the central portion seems to have been continuously occupied, and it was only here and there in the remainder of the area that the excavation was hampered by later uninformative buildings. Outside the main north-eastern wall, we had cut a trench straight through the slope, into the heart of the mound, and penetrated down to its origins in neolithic times. From this trench a welcome series of distinctive pottery fragments had been duly registered, and instructive data had been obtained by comparison with fragments found inside the area, and particularly with those found in and below the palace portico, which could be approximately dated to the eighth or ninth century B.C. In every way, it seemed to be important to continue this investigation.

### *Songrus Eyuk*

This great mound, rising 160 feet above the plain, proved to be almost entirely artificial. In form, it is roughly oval at the base, being some 600 or 700 feet in length, and 500 feet in width. It has grown up near a small stream which flows around its eastern and northern sides, and there is a good spring of drinking water within 100 yards in that direction. Its sides, for the most part, are extremely steep, representing much more than a natural slope, suggesting at once to the eye that it was held up artificially by walls and revetments of successive periods, which indeed proved to be the case. At the southern end the slope is much less pronounced, and



this end is naturally most used for climbing to the top at the present time. It proved to have been so used from the beginning, for the ruins of the gateways of various periods were found in excavation at that point. On the top, there was a more or less level surface, in dimensions, roughly, 400 to 500 feet, highest towards the west, generally oval in form but ending somewhat sharply at the north end. There does not seem to have been anything like a complete or permanent occupation of the mound since the Seleucid period, of which we unearthed a splendid ashlar wall leading on to a gateway and tower. In the highest part of the mound, about the middle of the western side, there came to light an almost complete building of about the same period, in the first or second century, B.C. Its walls stood underground almost perfect; they were built of mud brick upon foundations of stone. The corners and door-jambs and the topmost course of the walls were also of stone. This is an interesting local style of building still in vogue in the locality, and it was probably employed in much earlier times. Hittite traces were come upon at about 20 feet in depth,\* and the foundations of houses at 28 feet. It was, of course, impossible to clear the whole of the mound down to this depth, so we had to be content with a series of broad exploration trenches, following up so far as possible such walls as were found.

In this way we were able to cut down the western edge of the mound to a depth of about 40 feet. Hittite evidences were still being found at this level, and we have no reason to doubt but that they continued to lower levels; indeed our further exploration of the slope of the mound showed that the lowest interior buildings that we reached were hardly as old as the XVIIIth Dynasty (1500 B.C.), whereas a much older system of defences may be inferred. Around the mound, we traced three main periods of Hittite defensive walls; the uppermost just before the Egyptian XXVIth Dynasty and therefore of the latest Hittite period; another at a much lower level, two stout walls together, seemingly related to one another and dated by a distinctive Egyptian object between them to the XVIIIth Dynasty. The lowest and oldest wall, though single, was of similar character, but we failed to find any independent evidences as to its actual date, and were perplexed by intrusive objects and by ruins that had slipped down the steep slope to this point.

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\* Below our highest point; actually some 18 feet below the surface.

Other walls were indicated between those of the latest and second period, but the superposition of the remains made it impossible to trace them. In general, the construction of these defences corresponds with what was observed at Sinjerli, namely, a stout wall built upon heavy stone foundations, carried up with brick courses, with the slope of the mound below supported by heavy revetments. The lower courses, as a rule, had been built with burnt brick, and in one section the whole space between the two walls of the 15th century B.C. seemed to have been packed with the same burnt material. In the latest wall, however, and in the house-walls, no burnt brick could be traced; but in other respects the principle of construction was much the same. The variations in sizes of bricks were duly noted.

The entrance, at all times, seems to have been from the south. The gateways were located, and three distinct periods can be recognised; but it is not certain whether it will be possible to completely disentangle their plans, upon which we are still at work, for it would appear that owing to the continuity of occupation, the standing walls of a previous age were sometimes made to serve as part of the gate towers of that which succeeded. In general, however, their character may be recognised, and it accords entirely with what is known of Hittite gateways elsewhere, as at Sinjerli; namely, a flanking tower on either hand of a narrow entrance, projecting only slightly beyond the alignment of the wall itself. It is also noticeable that the main wall as it approached the gates, and the towers themselves, were all constructed of stone.

At the further end of the mound, there seems to have been, in later Hittite times at any rate, a postern leading down to the stream and spring. For the period, it lay extremely deep, and was difficult of excavation, being superposed with structures of several later periods, a fact which also complicates the plan of that portion of the mound. Several cylinder seals of Hittite character were found in this mound, and an object of much interest is a terra cotta head wearing the 'Phrygian hat,' possibly from a later Mithraic group; it came from the northern postern. A deposit of Syro-Hittite vases was found just between the main walls of the XVIIIth Dynasty period. In the excavation of the interior, instructive and important evidence was obtained from painted fragments of pottery found at various depths in the Hittite and post-Hittite strata. The

importance of these is largely increased by comparison with the results obtained in the excavation of the palace site in the smaller mound.

### *Jobba Eyuk*

In Vol. I, pages 101 to 105, we have already described the general appearance of this mound, and the character of the main buildings found within it. The arrangement of the sculptures and character of their art are described on pages 107-110, with plan and photographs. We do not need, therefore, to delay further with these details.

On this occasion, we decided to complete the examination of the mound, which is comparatively small in area, and rises only, at its highest point, some 10 or 11 metres above the ground. The main wall was followed all round, enclosing a quadrangular area, 130 metres by 100. Its form was quite regular with the exception of the north-western corner, where, following probably an earlier contour, the western wall inclined slightly inwards. The main wall was three metres in thickness, and it was strengthened at frequent intervals by external buttresses of quadrangular form, with a projection of nearly a metre. The interval between the buttresses was least where the slope of the mound was greatest, as may be seen from the completed plan which we reproduce on Plate III. It will be noticed that the buttresses around the corners give almost the appearance of extra-mural towers.

There was only one main gateway, in the middle of the shorter side: this was well preserved at one side but very ruinous at the other. Sufficient traces remained, however, to enable us to recover the plan. The flanking towers may be seen to have projected externally but not internally. On the inner side, there remained in position a great stone socket for supporting the wooden post upon which one of the gates would swing. The façade of this entrance had clearly been decorated with sculptures; and we found the original place of that fine group of a Royal Lion Hunt, with the king shooting from his chariot, now in the museum at Berlin. We also recovered the fragments of another group, which seems to have been almost a replica of that one, as well as other sculptures, chiefly of lions, which probably continued the scheme of decoration. At this point the surface of the ground had become worn low, so that

many fragments of sculpture lay only just beneath the surface; indeed, only a metre of earth covered the Hittite gateway.

Passing into the interior, the level rises, so that over the central portion and the site of the palace, 2·50 metres of earth had to be removed before the foundations could be displayed. The work was completed, nevertheless, before we left; and the plan shows all the foundations that could be traced. The area covered by the actual palace is 22 metres square, and its main walls may be seen to be of remarkable thickness, about 2·50 metres. Passing through a sculptured portico, the plan of which we reproduced in Vol I, Pl. XXXIX, we reach the outer hall which opens out left and right in the style still perpetuated in many official buildings of the country. To the right hand, a stairway of sculptured slabs led up to the floor of a room at a higher level. The decoration of the slabs included the rosette and other conventional patterns. On the side of the hall opposite the entrance are two doorways, both leading to two chambers beyond, which, in their turn, give way to rooms abutting against the main outer wall. The sides of this central doorway seem to have been freely decorated with the same style of sculptured slabs. It may be presumed that the great chamber beyond was one of the state apartments. The positions of the doorways are indicated by a socket stone in each case, which reproduces, on a smaller scale, the principle of that discovered in the outer gateway.

The doorway leading out from the left of the entrance hall gave access to a courtyard paved with cobbles. From this, a well-built stairway of stone steps led up to the main wall, around which there was presumably a walk behind the ramparts. At the foot of this stairway, a stone drain led through the thickness of the main wall, with an outlet projecting through the further side. Similar drains have been traced in other places around the walls. The interior, as originally laid out, fell away from the entrance of the palace, which was about its highest point, towards the walls, thus ensuring a proper drainage.

Following out the plan, it is seen that down the west side a double row of chambers is almost continuous, and there is a suggestion that this was the scheme of the whole interior. Unfortunately, towards the eastern side the interference of concreted walls and foundations of Roman period made it

practically impossible to recover more than a suggestion of the original arrangement of the buildings on that side. In the centre also, as described in our preliminary report, the buildings of three successive periods are superposed so that it was a matter of considerable difficulty to reach the Hittite level at that spot. We ascertained, however, with certainty, that the cobbled pavement which leads from the portico continued through the centre of the enclosure and led on directly towards the main gateway. It is thus to be inferred that the central portion of the area was open and free from buildings, while, in general plan, the palace buildings and offices were ranged in a double or maybe treble row around the inside of the main walls. The general scheme, therefore, recalls that of the great contemporary palace at the foot of the Acropolis at Boghaz-Keui in Asia Minor. The cobbled pavement to which we have alluded as leading from the palace portico outwards towards the main gate, was found to end in a pavement of sculptured slabs, like those found inside the palace; but it is not clear that this is an original feature, though it may have been a reconstruction of Hittite times.

With regard to construction, both the main walls and, for the most part, the palace walls, had a foundation of stone but were carried up in brick, the lower courses of which, at any rate, were burnt. The main wall was faced with irregular five-sided blocks, roughly dressed, corresponding in some degree with the great Hittite walls of the capital. The inner face was much the same, with a solid rubble and stone packing between. These foundations seem to have been brought originally to a common height, so that where the ground was highest there was perhaps only one metre of stonework, whereas on the north-eastern side, where the slope is sharp, there still remain three metres of solid masonry. Above this, the first courses of brick were usually large slabs, upon which the brick wall was carried up and still remains in some places eleven or twelve courses high. We took the utmost pains to trace these walls amidst the accumulated débris, and were helped as the season drew on by occasional rain, which served a most useful purpose in lining out the brickwork.

The principle of construction in the interior walls of the palace was practically the same, but the stonework was less massive; in fact, the facing stones of the foundation were comparatively small.

The thickness of the wall above the foundations would seem to have been at least half a metre less than the foundations themselves. The large brick slabs upon the stone bed are only found in the case of the main side wall of the palace; while in one case, which we indicate in the plan, the foundations themselves were of brick. In a few cases, a considerable height of fallen wall could be traced in the cuttings, where the face of the wall, though fallen from its position, remained true, and was further marked by a solid coating of stucco. This showed as a straight white line in the earth, and served, not infrequently, as a useful indication. Another instructive detail was the discovery of some of the rain trough-stones from the roof, which had settled down, with the gradual subsidence of the walls, to a height of about two metres above the foundations. This enabled us to estimate that the original building was one-storied and about 4.50 or 5 metres in height; assuming always that there has been no serious disturbance or denudation of the ground above the site of the palace.

As on the previous occasion, some instructive small objects were recovered, and their testimony is doubly valuable in this case, where approximate dates have already been determined. These included seals, stamps of various kinds, sealings with Hittite hieroglyphs, a stone with signs upon it, and a variety of painted vase fragments, as well as a quantity of ordinary implements.

On the outer side of the north-east wall, at the spot marked with an asterisk, alongside the section described as trench A (Vol I, page 110), Mr. Hamilton-Beattie and Mr. Phythian-Adams undertook the supervision of a new trench in which we decided upon a more minute system of registration, to secure from the valuable mass of pottery fragments at that point as complete a record of the stratification as possible. They examined every cubic half-metre of ground from the outer end of the slope inward to the main wall and down to the virgin earth. Several thousands of vase fragments were discovered and recorded, and they are still at work analysing and studying the results. On the whole, not so much painted ware was found in this new trench, but on the other hand, a greater number of vases could be completely restored. At the bottom of the cutting, within a metre of the place where on the previous occasion we found extensive neolithic hearths and floors, we now found foundations of a house and burial cists, unquestionably of neolithic period.

With regard to the main historical points, the palace and main wall are without much doubt contemporary with one another, and belong to about the 9th century, B.C. Below the palace, we have been able to get down to older walls, but it is impossible to say that they belong to anything other than ordinary dwellings of an earlier period. We do not even know that they represent a Hittite occupation; but this is a reasonable inference from our study of the pottery of the site, which presents an unbroken continuity from post-neolithic times down to the palace period.

We are able, during the brief time which has been available since our return, to so far co-relate the results of our excavations in these two mounds, as to feel sure that we have the evidence before us which will enable us to identify in the accumulation of pottery outside the main wall that stratum, or series of strata, which corresponds to Egyptian XVIII Dynasty, about 1500 B.C. There is no suggestion, in our exhaustive examination of this mound and thorough testing of the greater one, of anything other than a continuous Hittite occupation from post-neolithic times until (and including) the period of the palace, which arose during the revival of the Hittite states of Syria in the early part of the first millennium B.C. We hope at an early date to publish a complete report of this excavation with a full series of plans and photographic illustrations corroborating these conclusions.

One further point may be touched upon. On p. 113, Vol. I, the Editor of the *Annals* suggested an alternative interpretation to the conclusion we came to as to the lime revetment we noticed supporting the main wall on the north-eastern side. He suggested that it was the result of an accumulation of limestone chippings, formed by trimming or dressing the outer face of the wall after the stones were in place. We have, however, tested this point, and found our original observation substantiated. The revetment is not only a definite feature of the construction, but it has been regularly designed, and in some cases great slabs of hard lime or concrete have been laid in regular herringbone fashion within it. There is, however, a preponderance of free lime. The fact that the stones which form the face of the wall are of volcanic rock in any case dismisses the alternative explanation; but, following up the suggestion, a careful examination revealed a narrow stratum of wall-chippings just below the lime revetment.

## THIRD INTERIM REPORT ON THE EXCAVATIONS AT MEROË IN ETHIOPIA

By PROFESSOR JOHN GARSTANG, D.Sc.

WITH PLATES VI—X

The second interim report, on the results of our second expedition to Meroë in the Sudan, appeared in the *Annals of Archaeology*, Vol. IV, pp. 45 to 71, with plates vi to xvi.

It will be recalled that, amongst other pieces of work, we traced the outline of a Royal City and excavated within it two palaces, as well as several other smaller buildings. It was clearly desirable to concentrate our work for a few seasons upon this central area, so that, with the exception of a few outstanding pieces of investigation, nearly all our excavation during the past season was carried on within the boundaries of these city walls. (See Vol. IV, Pl. ix.)

It is gratifying to note that the Committee, who generously provide the funds necessary for this work, were constituted as for the previous expedition, and were further strengthened by the inclusion of Sir Edmund Walker, of Toronto, and Dr. Jacobsen, of Copenhagen. A contribution of £1,000 from the National Arts Collection Fund, on behalf of the British Museum, helped materially towards realising a sufficient sum of money to resume the excavations upon an adequate scale. The Government of the Sudan, represented in particular by the Director of Railways and the Conservator of Antiquities, gave us from first to last their never-failing encouragement and assistance. In camp we were rather short-handed, the party consisting only of Mr. Schliephack, Mrs. Garstang, and myself. We had not, on this occasion, the advantage of Professor Sayce's swift insight and stimulating companionship; and other friends and helpers who had come on the previous occasion were prevented by various circumstances from joining us. We had, however, our old staff of skilled workmen from Egypt, and their increasing experience proved an invaluable asset. We also employed advantageously and with economical results a cable-way designed and made for us at cost-price by R. White & Sons, of Widnes, and several lengths of light railway lent by the Government.



*The Royal City*

It will be seen by comparison of the old plan with the new (see the accompanying plate No. VI), that during the season considerable progress has been made towards recovering the former arrangement of the site. Many of the buildings shown in it, however, are of later period than others, and we have still to develop a plan of the city as it was originally laid out. We have, however, now obtained evidence sufficient to show us the manner in which it grew, and to enable us to discriminate between the buildings of three definite periods. Accordingly, our first efforts were directed to a systematic excavation of surface buildings occupying the higher pieces of ground within the area, with a view to removing these and examining the earlier structures below them. Two such mounds were conspicuous; the one in the north-eastern corner of the enclosure, the other reaching eastward from the building numbered 292, under the threshold of which, last season, the bronze head of Augustus was discovered. A third mound, less conspicuous as to its height, lying westward from the palace No. 295, seemed, from the surface indications before excavation, to contain a building of special character.

The plan of the north-eastern corner is, at its present stage, somewhat complex. The main wall has been traced almost continuously, except at one place where one of the latest buildings passes beyond and over it. It is just possible that at this point there was a gateway, but the question will be rapidly solved with the progress of our excavation. There is, at any rate, an external tower which, combined with a break in the wall, leaves room for this possibility. In the northern wall, towards this corner, there are two special features; the one a flight of steps which originally must have led up to the ramparts, and the other a postern which is well defined and protected on the inside with a guard chamber. In the exact corner the ashlar wall is seen to be double, and externally the corner is strengthened by a quadrangular turret. With regard to other buildings, without entering into details in this brief report, those walls which are of good strength, and clearly arranged in due reference to the enclosing walls, (Block 297), alone may be looked on as original; while those along the eastern side which are placed at various angles to the main axis (Block 197), are clearly super-

posed upon an original plan. Hereabouts, just outside the main wall (in the spot marked 289), there was found a remarkable deposit of broken Meroitic pottery vases, decorated with paintings and stamped patterns.

### *Roman Bath*

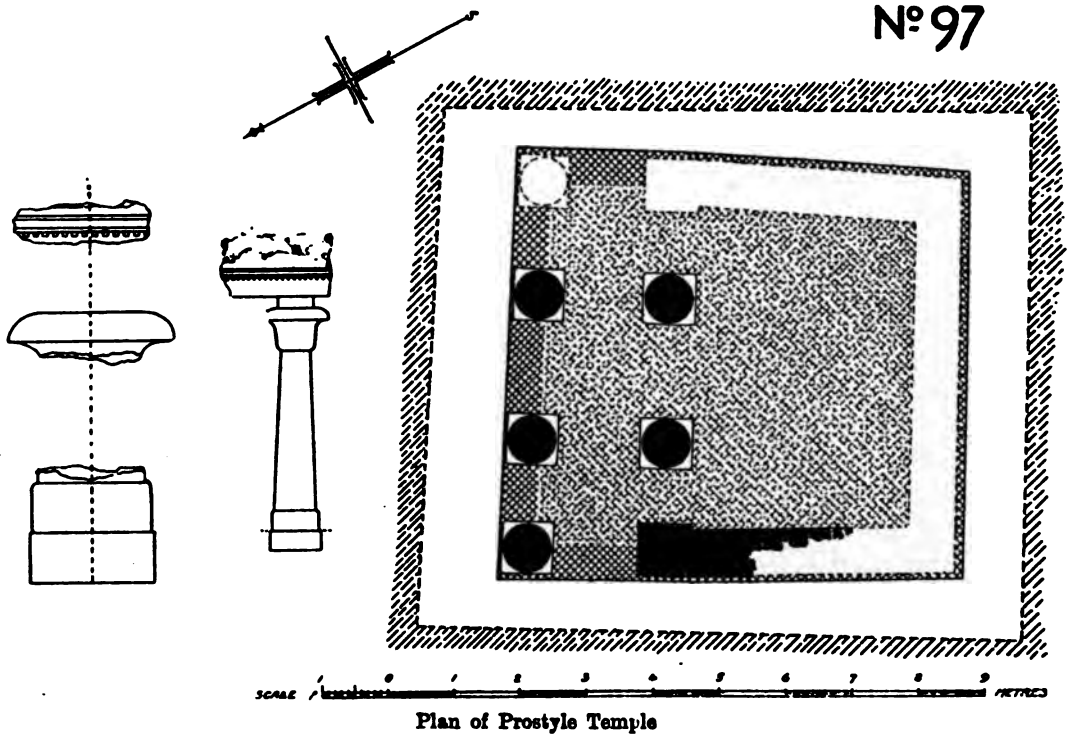
The surface of the mound numbered 98 has not been so completely cleared, but the plan presents a more or less connected appearance. There is, however, the same difficult problem of relative date to be disentangled, for the walls have all much the same appearance, though some of them represent a reconstruction of the main building apparently while the latter stood. One set of rooms contained a stone bath, of full size and modern shape, carved in a single block of stone. It had an outlet, but the water service cannot be traced: and there is a system of flues and heating apparatus, also of stone, in close proximity, suggesting that the whole formed part of a regular *caldarium*. The portion of this block to the north is apparently not contemporary; the walls are thin and irregular, interspersed with rows of pottery vessels and pits.

While these spots were being worked, it was found possible to dispose men in the level ground to the north-west of this mound, lying between buildings 292 and 296 and the western wall. With the help of light railways, a great amount of clearance was effected in this area, as the plan will show. Numerous small chambers like barrack-rooms or store-rooms were brought to light; but it was soon made clear that these were not the buildings of the original city, for in examining the apparent floors of these rooms, and working down to a further metre, through sand and débris, a series of stone columns was disclosed in the area marked 199: clearly this is a building contemporary with and similar to the columned buildings, 296 and 298. A more substantial structure, and one arranged with some reference to the main wall is No. 91, and this may be taken as a type of Meroitic houses. It shows the common Oriental features of the courtyard and residential rooms within its enclosing wall. The block No. 198 contained a building of special character; to judge by what can be traced, it must have been provided with a colonnade which presumably enclosed it. Abutting on this at its

north end, a series of buildings (93) represents two periods superposed, and encloses a brick kiln which presumably belonged to the later of these. Just to the south of this, in the spot numbered 92, a flight of stone steps and well-built threshold clearly marked the entrance to a substantial structure of the original city.

### *Classical Temple*

Further to the north, numbered 97, there was found a small prostyle temple, the plan of which is here reproduced. It seems to be fairly contemporary with other excavated buildings adjoining it, and some of those lying to the south; but it is clearly later than a well-built structure of red brick, the foundations of which still



enclose it. The walls of the temple-platform indeed were built of the bricks taken from these earlier walls, and handed across the conveniently narrow space intervening. The platform was enclosed in a single thickness of these red bricks but solidly padded with

'wasters,' that is, red bricks which had lost their shape, or otherwise defectively burnt in the kilns. Five bases of these columns, as may be seen from the photograph on Pl. X, remain in position, and a little investigation soon disclosed the foundations of one of the antae. The length of the structure in proportion to its breadth does not give sufficient space for *naos* or *pro-naos* on the strict classical model, and we may suspect that, in this case, for local reasons, the dividing wall was dispensed with, and these two features were combined in a single chamber open to the cooling breezes of the north. The form of the base, the entasis of the column, the upper part of the capital, and some fragments of the entablature, together with a few miscellaneous decorative mouldings, are preserved; and by comparison with an existing column in the 'Taharqa' Building, 296, lead to a restoration of the order something like that which we reproduce with the plan. At the time of writing, the fragments of pottery and other small objects which may enable us to distinguish the exact date of this building, are not available for study, but it may be observed that in the samples of pottery from other portions of the site which are accessible, Professor Bosanquet fails to recognise anything distinctively Roman, while some pieces are clearly of an earlier character, dating possibly from the second century B.C., and stamped with Graeco-Egyptian names.

Summarising the general results of this portion of the work, it may be said that four building periods may be recognised. The earliest and apparently original series of buildings were of stone, and their foundations, for the most part, are not reached at less than two metres below the surface. They were followed at a considerable interval by buildings of red brick, which were soon supplanted by buildings, the walls of which were only faced with red brick. Then a further considerable interval follows until the surface houses are reached with their walls of mud or mud-brick, sometimes based upon rough foundations of stone.

### *The Royal Baths*

We now come to the last and most instructive discovery which we have made within the site, in that portion, between the Royal Palace, 295, and the city wall, to which the working numbers 195,

194, and 95 were assigned. The excavation of this low mound was taken in hand at the beginning of the season, but owing to the extreme tangle of the buildings within it, and the superposition of several periods, it was only during the last days of our stay that its full character and importance became clear. Working down through the superposed walls, we came upon the Royal Baths, and determined the original plan, as far as reproduced on Plate VII. Our excavation of this building is not yet completed; but several of the chief rooms have been uncovered, including a local form of *frigidarium*, in the large swimming-tank and shower-bath, marked B, and a *tepidarium* (T), with ornamental seats. Attached to the baths are a series of chambers, C and D. The areas E and F have only been superficially examined, but it may be presumed that the colonnade traced along the western side of the tank was continued round it, as suggested in our plan. The enclosing wall of the whole building is fairly well defined by its facing of red brick, and the painted design upon its stuccoed surface, but there are several details which still require illustration.

Two flights of steps lead down into the *tepidarium*. Its three seats are disposed around the quarter of a circle, and their arms are conventional griffins carved in stone. There was also found, fallen on to one of the stairs, a winged sphinx of stone, with the body of a lion and the head of a bird. The seats are of familiar rounded shape, built into the thin dividing wall which follows their curve. Several fallen capitals, and parts of engaged columns, stuccoed and painted, were found lying about in various places, but further details of its plan are still uncertain.

The swimming-bath, B, is in a more complete state; the tank is two metres deep, and a flight of steps leads down to the bottom on its eastern side. The water inlets on the southern side are preserved, and are six in number, without counting the open-mouthed lion-head at the corner. The water supply is found in an ingenious system of storage-aqueducts, coming from the south, lettered A. These were built of red brick with a cemented channel about 20 cms. in width, and 30 cms. in depth. They had practically no fall, until they approached the bath, where there was a gully or pipe provided with a stopper; so that the canals having been already filled, presumably from the well marked in the plan, the stoppers could be withdrawn simultaneously, and the water allowed

to flow in a continuous cascade from the many openings into the tank. On this side the aqueduct is divided into four channels, which are distinguished in the plan by figures. The portion A1 led round the building c, and fed the nearest inlets, as was demonstrated by experiment. The portion A2 passed through the middle wall of c by a pipe, presumably to feed the central part of the cascade; and the portion A3 returned round the other end of the building, and headed for the nearest pair of inlets on that side, being traced at one point as a brick pipe lined with iron. The fourth branch A4 was brought down as it neared the bath to a lower level, and fed the gargoyle in the corner. The other walls of the bath are not preserved, but there is a distinct suggestion that, at any rate, the opposite side was fed in similar fashion from the system of aqueducts marked GG, which have not as yet been completely traced. The exact significance of the well H has also not been ascertained.

The southern wall of the swimming-bath is so well preserved that its original decoration largely remains *in situ*. Between the water inlets there may be seen in the photograph, Plate VIII, a series of glazed tiles, medallions and other devices, the fore-parts of alternate lions and bulls sculptured in stone; and above them, on the plastered surface of the wall, are the traces of frescoes, among which two serpents and the legs of an elephant may still be recognised. There are also the pedestals of two or three statues standing along the wall, and the greater portion of a hound carved in stone. The head of the dog was recovered; and it was also found possible to restore the central statue, which proved to be the representation of a harpist; and to replace the head on the left-hand sculpture, the subject of which is a musician playing the pipes. In the well of the bath the figure of a third musician was found, a flute player, and also the portions of numerous other statues. These included a local VENUS, a reclining figure in the pose of the Vatican GOD-OF-THE-NILE, a seated figure, clad in robes, holding a scroll, and several others.

In other portions of the building considerable fragments of statues were freely brought to light, and doubtless the number will be added to as the excavation proceeds. Some of these are of distinct merit as artistic products. We must also mention two statues which were discovered in the last days of the previous season, in a small chamber (near to the well w), which had intruded

itself into the neighbouring corner of the palace enclosure, No. 295. These have been restored and placed in the museum at Khartoum. (See Plate IX.) They represent a man and woman; the latter may have been carrying a water pitcher on her head, and the man labouring at the well. That the woman really carried some object on her head is proved by the traces of an actual attachment for that purpose, but possibly it was for a smaller object, such as a lamp.

These Baths, with their decorative features, may be regarded as typically Meroitic. Nothing that had previously been found throws so much light upon the characteristics of the local arts of the period or periods they represent. The main structure of the bath we believe to be more or less contemporary with the adjoining palace, about the 2nd or 3rd century B.C.; but it was partly reconstructed, it would seem, about a century later. The sculptures seem to group themselves into these two periods; the one set, which is not numerous, of almost purely local conception, like the two figures last described; the other, which is the more common, derived from classical motives. These are clearly all of local execution, and in many cases somewhat crude. But there are some exceptions:—a few of these carvings, doubtless also local products, are full of vigour and character, and not without signs of form and grace; notably the head of a SATYR (or more strictly a SILENUS), the torso of a draped standing statue which is not here reproduced, and details in the execution of the flute player. The last-named is, unhappily, so much broken that a photograph hardly conveys a faithful impression of its quality. The torso of a male figure clad in a tunic and holding his robe over his left arm, recalls strongly the Vatican AUGUSTUS, and suggests a still later period for some, at least, of these sculptures.

The main building which we last described had been very much confused and disturbed by another of rough stone and rubble, which lay across it. This is shown in the plan (Plate VII) by dotted lines, but in the general plan on Plate VI its character may be better seen. It suggests a series of barrack-rooms, hastily built. There was also one wall of good stone work later than the baths in date, and extending from the main wall of the city towards the palace, 295; it has still to be traced further. The walls of the baths present several different features, doubtless accounted for by periods of restoration. Those which we are inclined to think the earliest are

built of small slabs of stone like the foundations of the adjoining palaces, while the later and more prominent walls are those built of solid red brick, and those with red brick facings but mud brick core. A third distinct period is represented, built in brick above these, but it is not important at the present moment to describe its remains, and we have omitted these from the present plan to avoid further complication. The last period, that of the rubble-stone walls, clearly belonged to a time when the city wall was already in ruins, for they may be seen stretching out over and beyond the old city boundary.

### *General Conclusions*

Looking broadly at the results obtained during these three seasons of excavation, it now becomes clear that there are three main periods represented in the buildings which have been excavated, each one probably to be in its turn subdivided as work proceeds. The first is that of the original conception of the Royal City in the 7th or 8th century B.C.—the age of Aspelut, Hor-matileq and Mal-neqen. To this date belong the great buildings in stone,—the walls of the city, the original portions of the Royal Palace, 294, and of the audience chamber 292, the so-called Taharqa building, 296, and the low-lying columns found this year in Block 199. The early wall below the baths, mentioned above, must also belong to this time. Alike from actual evidence, as from type of structure, the Sun-Temple must be assigned to this date, for in its courtyard was a broken inscription of Aspelut. To this period also belongs the earliest building in the Temple of Isis with its giant statues, and probably the building of the Lion Temple and the small shrine (No. 70) adjoining it. In this age, Egyptian motives in art and probably in culture were still predominant. The next period is distinguished by the supplanting, about the third century B.C., of Egyptian ideas by Greek; as witness a small cameo of galloping horses found last year and the semi-classical statues just described. In construction, solid stonework has given way to foundations of stone slabs and walls faced, at any rate, with red brick. The buildings of this age must include the Baths, the later Temple of Isis, and probably the small classical temple. The Temple of Amon we presume to have been built earlier, but to have been now reconstructed. The facts connected with the rise of this period



seem to accord well with the tradition of Ergamenes given by Diodorus. There arose upon this basis, as a second phase of its middle period, the great days of Meroë, associated in tradition with the Queens Candace, lasting till the first century A.D. To this time belong nearly all the distinctive objects of pure Meroitic origin, such as the fine painted and stamped pottery, the glass and decorated tiles and so forth. The third phase is one of decadence, and, so far as it can be recognised at present, seems to be distinguished rather by Roman than by Greek ideas in art, but the buildings of the time are comparatively crude and lack distinction. In the middle of the fourth century A.D., however, the city still maintained its importance; and it was deemed the worthy objective of a military expedition as late as the seventh century; so that further examination has much to disclose as to the character of Meroë in its later history.

### *Chronological Summary*

Summarizing these tentative conclusions we have, in the now familiar terms:—

Early  
Meroitic  
B.C. 700—300.

- I. The Royal City (290): Stone walls, Foundations of Palace 294, of audience chamber 292; of the 'Taharqa' building 296; and the low-lying columns, 199.  
The Sun Temple; Lion Temple and Shrine (70).  
Original temple of Isis, with giant statue columns.  
[Characterized by ashlar masonry; tombs of early iron age; red and black wares in pottery, plain. Meroitic hieroglyphic inscriptions.]
- II. Temple of Amon (possibly enlargement and partial reconstruction).  
Palace partly underlying 295.  
Some chambers reused later in the Royal Baths.  
Some isolated foundations.  
[Characterized by stone-slab foundations, carried up in brick; Tombs of developed iron age; tendency to decoration on red and black pottery wares, by white lines or incisions. Meroitic cursive inscriptions.]

Middle Meroitic B.C. 300— 100 A.D.	<div data-bbox="481 264 1106 401">           I. Royal Palaces 294, 295. Royal Baths 194, etc.,            (<i>Temp. Ergamenes.</i>) Audience chamber 292.            Pottery and Brick            Kilns.         </div> <div data-bbox="517 407 1106 550">           [Characterized in construction by red brick            walls; in art by introduction of Greek            motives; the beginnings of thin decorated            wares in pottery; Meroitic Inscriptions.]         </div> <div data-bbox="474 550 1106 727">           II. Classical temple, reconstruction in baths and            over the temple of Isis. Partial recon-            struction in palace 295. [Period of quasi-            classical statues. Full development of            Meroitic pottery wares, faiënce and glass.]         </div> <div data-bbox="460 727 1106 833">           III. Head of Augustus, Torso of Augustus, Roman            baths, Palace 750. Graeco-Roman            inscription.         </div>
Late Meroitic A.D. 200—700.	<div data-bbox="474 844 1106 942">           I. { Characteristics not clear; Roman influence                  presumed.                  Invasion of Axumites, about A.D. 340.         </div> <div data-bbox="474 942 989 972">           II. Destruction of Meroë, about A.D. 700.         </div>

## THE LINEN GIRDLE OF RAMESES III

By THOROLD D. LEE, B.Sc.

Among the objects comprising the collection bequeathed by Mr. Joseph Mayer to the Liverpool Museum in 1867, was an ancient Egyptian girdle (Inv. 11,156), which has been on exhibition ever since: it appears, hitherto, to have escaped the attention it deserves, both from Egyptologists and those interested in the history and development of the art of weaving.

In the Autumn of 1911, Professor Newberry, who was at the time re-arranging the collection of Egyptian antiquities in the Museum, noticed that this girdle was of exceptional interest and importance on account of the fact that a pattern was woven into it, and that it bore the name of Rameses III written upon it. The oldest known examples of fabrics bearing a woven design are the fragments of tapestry that were discovered in the tomb of Thothmes IV at Thetus, and date from about 1500 B.C.; and the next most ancient examples, hitherto known to exist, were found in the Crimea, and date from about 400 B.C. The girdle that is the subject of this paper dates from about 1200 B.C., and would, therefore, be of exceptional interest even if it were only a figured tapestry, as are the specimens referred to above. It is, however, of a much more complicated structure, and shows, indisputably, that even at that early date the Egyptian weavers were possessed of a very considerable skill in the technique of their art, and built and used looms that were much more complicated than has hitherto been believed to be the case.

The girdle measures 17 feet in length over all, and in width tapers evenly from 5 inches at the wider to  $1\frac{1}{2}$  inches at the narrower end. It is woven with the warp, or longitudinal threads, running along its length, the selvages forming the upper and lower edges. In order to prevent the ends from fraying out, the wider is bound with a braid, made of the same thread as is used in the cloth itself, formed into a loop at each corner, while at the narrower end the warp threads are plaited together in a cord or fastening.

The material of which it is composed is linen, and the object in adopting the method of weaving that has been used, has clearly been to make the cloth as firm and, at the same time, as pliable as possible. The result has amply justified the complicated nature of the weave, for the girdle feels compact and unlikely to work into a rope when worn, while its smoothness and pliability to the touch remind one of a snake's skin. The number of colours used is five, blue, red, yellow, green, and the natural shade of the undyed linen, and, although in places they have faded almost to the point of being indistinguishable from one another, yet, on the whole, they appear to have stood the test of time very well. The green colour is only used in one or two places, and there, only in small spots, so that it is not noticed until the girdle is closely examined.

The illustration shows the nature and arrangement of the pattern. The white stripe down the centre, which is  $1\frac{1}{2}$  inches wide at the wide end of the girdle, is completely eliminated at the narrower end. About 12 inches from the wide end, the cartouche of Rameses III has been written in a black or dark brown ink on the girdle, in the middle of the white stripe. The ink used, appears to have damaged the linen, and this accounts for the fact that there is a hole in the girdle at this point, but, fortunately, the damage has not entirely obliterated the cartouche, which is still decipherable.

The condition of the girdle is remarkably good for, with the exception of the hole mentioned above, and one or two cracks and places where the edge is ragged, it is a perfect specimen.

The thread of which it is composed is threefold,\* and the same thickness appears to have been used for warp and weft. A careful computation of its thickness, calculated from the weight of the girdle (about  $11\frac{1}{2}$  oz.) and the length of thread required to make it, gave a count of threefold 105 lea, linen scale. It is very evenly spun, and still has a considerable amount of strength in spite of its great age. For the benefit of those not acquainted with the linen scale, it may be said that one pound weight of single 105 lea

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\* A threefold thread is one that is composed of three fine threads twisted together just as a rope is composed of several strands. The first process in its manufacture is the spinning of the fine single thread, three threads of which are then 'doubled' up, to form the threefold thread.

thread contains a length of about 18 miles, the 'threefold' being about the thickness of fine sewing cotton.

The girdle, as has been stated above, has been woven with the warp threads running along its length, while the weft threads, those that are carried by the shuttle, pass across it from side to side. The warp threads have been dyed to the various colours that compose the pattern, and lie so closely beside one another as to cover the weft threads completely. These latter are of undyed yarn, and count on the face about  $30\frac{1}{2}$  to 1 inch. As the cloth is a double one, a different set of weft threads weaves the back from those used for the face, so that we have about 61 threads of weft to the inch in the complete cloth. The warp threads count about 68 to the inch on the face, and as there are two different qualities or weaves of cloth in the girdle, as will be explained later, one of which requires four threads, and the other five, for each thread shown on the face, we find there must be no fewer than 272 threads of warp to 1 inch, in some parts, and as many as 340, in other parts. It is to the great quantity of yarn that is used to make it, that the cloth owes its firmness, while the method of arrangement of the threads accounts for the fact that it is so wonderfully pliable.

Much as the interest of this remarkable specimen may appeal to the general observer, it is not until we come to examine its structure that we discover the most remarkable points about it, for by doing so, we are able to deduce the method of its weaving, the really complicated form of loom used, and the great ingenuity displayed by the weaver in obtaining his pattern.

The structure or design\* of a cloth is not an easy matter to explain to a person unacquainted with such matters, the usual terms and diagrams being almost incomprehensible to the uninitiated, but in the present instance, the design, or rather designs, are so ingenious that it may be worth while describing them in a somewhat more elementary manner than would be necessary to explain them to a weaver, in order to enable the non-technical reader to understand them, should he wish to do so.

In weaving such a cloth as the one we are considering, the warp threads, all being laid parallel with one another, are stretched on

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\* NOTE.—Throughout this paper the term 'design' is used to refer to the plan or arrangement of threads composing the cloth irrespective of their colour, and by the term 'pattern' is implied the zig-zags, stripes, etc.

the loom, being wrapped round a roller at each end or secured in some other way. The weaver first draws a certain number of them forward, and then passes the weft thread across, between the warp threads that he has drawn forward and those left lying behind them. Let us suppose that all the warp threads are numbered consecutively, starting from number one at one side of the loom, and that to begin with, all the odd numbered threads are drawn forward and a thread of weft is woven in, then all the even threads are drawn forward and another thread is woven in, and this process is repeated again and again, first the odd and then the even threads being drawn forward. The cloth that will be woven will be of the simplest design that can be imagined, being the same as plain calico, or plain tapestry cloth.

If, after having woven some of the cloth, we were to dissect it by cutting it up along the line of the warp, the section showing the odd warp threads would be as follows—the dots representing the section of the weft threads—



FIG. 1.

and the even warp threads would appear thus—



FIG. 2.

while a diagram of this kind



FIG. 3.

would represent the complete cloth, and would show that it was woven on a design that required two warp threads, and two threads of weft, to complete it.

Now it was found by examining the plain white stripe up the centre of the girdle, at a place where it was torn, that the arrangement of the warp threads was as follows, though of course the

diagram shows the effect very much enlarged, the actual size of the section shown in the diagram, covering in the cloth only one-third of an inch.

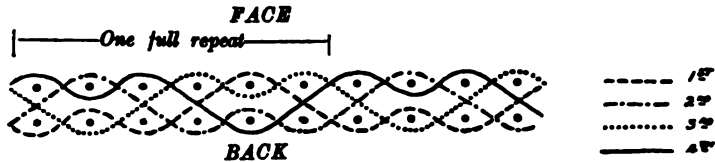


FIG. 4.

It will be noticed that four warp threads are required to make this design, and they have been indicated differently, in order to show the order in which they occur. It will also be noticed that this design shows a double cloth, one set of weft threads being used to make the back and another set being used for the face of the cloth, and that the design repeats on twelve threads of weft, six back, and six face ones.

If, in the cloth, all the warp threads were of the same colour, and were so close to one another as to hide the weft entirely, the effect would be a plain cloth of uniform colour, and this is what we see in the white stripe down the centre of the girdle, as well as in the plain blue and plain red stripes that lie next to it on either side.

Among the different patterns to be found on the girdle it will be seen that there are a number of stripes, consisting of spots of various colours. There are eight of these in all, four in each border, six of them being the same on one side of the cloth, reading white, red, white, blue, white, blue, this pattern repeating again and again. Now it will be seen that if the 1st and 4th warp threads in the diagram were white, and if the 2nd was red, and the 3rd was blue, the effect on the face of the cloth would be a series of spots in exactly the arrangement found in the stripe referred to. If, however, we examine the effect of such an arrangement of colours on the back of the cloth, we shall find that the pattern is not the same, as it will read, white, blue, white, red, white, red, having two spots of red and one of blue, to the two blue and one red on the face.

An examination of the cloth showed that this was actually the pattern given by five of these stripes on the back, but the sixth

stripe, one of those on the outside edges of the borders, gave exactly the same design on the back as on the face. The other two spot stripes read thus, yellow, green, yellow, blue, blue, blue, being the same on both back and face, and it will be seen that it is impossible to get this pattern by any arrangement of the colours of the threads, if woven on the design given above.

It will therefore be seen that the design with which the white centre stripe was woven could have been used to weave the two inner spot stripes and three of the outer ones, and an examination of a place where it was possible to see the arrangement of the threads on one of the stripes proved that this was the case, so that after the weaver had once arranged his warp threads so that, of each set of four, the first and fourth were white, the second was red, and the third was blue, all he would have to do would be to weave along on the same design as given above, and spot stripe would be produced; while, where all the threads were white, red, or blue, a plain coloured cloth in white, red or blue would result.

An examination of the texture of the girdle shows that the centre section out to the inner spot stripes, and one of the outer edges, is thinner than the rest of it, this thicker part being uneven, having distinctly marked ridges running across it as though every fifth and sixth threads of weft were thicker than the others. Most fortunately a portion of the edge of the girdle, at which this unevenness occurred, was damaged so that it was possible to find out the design of this uneven part. The design may be represented as follows:—

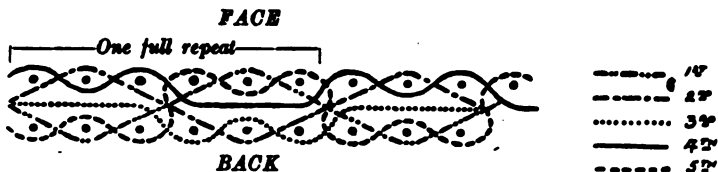


FIG. 5.

It will be seen at once that whereas this design resembles the former one in that it repeats on twelve threads of weft, six face and six back, yet it requires five threads of warp instead of four. If the first spot stripe is again considered it will be seen that we can obtain it by the use of this design if the first, third, and fourth threads are white, the second is red, and the fifth is blue, and it



will be noticed that with such an arrangement the back and face will both give the same pattern.

It will also be seen that the spot stripe, yellow, green, yellow, blue, blue, blue, which could not be obtained with the other design, can be obtained with this, and also gives the same pattern on the back of the cloth, this being the case in the girdle.

We now come to the examination of the other patterns, of which there are two, and as a moment's consideration will enable one to see that if one of these can be woven by this design, the other can also, it will only be necessary to explain one.

Taking the zig-zag pattern, it will be seen that it consists actually of only three different spot stripes arranged below one another so as to give the effect required. Of these, two are really the same as the two that we have considered so far as arrangement goes, marked Z and Y, though the actual colours used may be different, and the third one, marked X, reading blue, white, blue, blue, blue, blue, can be obtained by having the second thread of each five, white, and the rest blue.

The diagram shows the zig-zag pattern. The letters show how each section or step may be read as a spot stripe, and the table shows the colours of warp threads that must be used for each of the group of five, required to complete the design of the cloth.

Table of arrangement  
of Warp threads

One repeat															1 2 3 4 5										
X										B	W	B	B	B	B	X					B	W	B	B	B
Y										W	R	W	B	B	B	Y					B	R	W	W	B
Z										R	W	R	W	B	W	Z					B	W	R	R	W
Y										W	B	W	R	W	R	Y					W	B	W	W	R
X										B	B	B	W	R	W	X					R	B	B	B	W
										B	B	B	B	W	B						W	B	B	B	B

= BLUE
  = RED

FIG. 6.

It will therefore be seen that this zig-zag pattern can be woven just as simply as the spot stripes first considered, so that when the weaver had once fixed up his loom he had no further need to pay any attention to the pattern, which came up automatically, and it can easily be seen that the other pattern can be accounted for in the same way. This design on five warp threads is therefore proved as being the one required to weave the parts of the girdle that could not be woven by the design on four warp threads, and anyone

with any knowledge of weaving will at once see that the five-warp-thread design will cause the ridges referred to above, on account of the uneven way in which the double cloth formed by it, is bound together.

With reference to the back of the cloth, the following diagram shows the effect that would be obtained on the reverse side, by the same arrangement of the warp threads as used for the face in the table above.

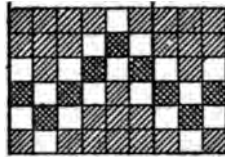


FIG. 7.

This diagram represents the back of the cloth as it would look if it could be viewed through from the face, and it will be seen that the pattern is all moved along three weft threads, so that the 'Zig' appears at the back underneath the spot where the 'Zag' is, on the face, and this corresponds with arrangement of the design as found on the cloth itself.

We have now proved the designs in which the girdle is woven, and seen how, by a complicated draft, or arrangement, of the various coloured threads, the different patterns were all produced automatically as long as the weaver continued to weave the cloth according to the two designs that we have seen were used. The drafting of the warp for such a pattern as this will readily be understood to have been a matter requiring the greatest patience and accuracy, when it is remembered that there were about 340 threads to the inch in some parts, but even after the warp was set up in the right order, the weaving of it would be a matter of very considerable difficulty, and one calling into play all the skill of the weaver.

In the weaving of the simplest form of cloth as referred to above, we have seen that the weaver draws forward the alternate warp threads before passing the weft through. In the most primitive form of loom this is done by hand, each thread being picked out and drawn forward separately, or the needle, or shuttle, carrying

the weft is threaded up and down across the warp exactly as in darning.

It will be readily seen that if there are a large number of warp threads, the speed of weaving will be very slow indeed if each one has to be picked out by hand, so that an arrangement of what are known as lisse threads was adopted at a very early date, being shown in use in a picture of an Egyptian loom dating back to about 3000 B.C. These lisse threads consist of a large number of short threads of even length, having a loop at one end, and being attached at the other end to a bar of wood or a string stretched across the loom. To set up a loom to weave plain cloth, two sets of lisse threads might be used. The even warp threads would be threaded through the loops in one set while the odd warp threads would be threaded through the loops in the other set. All that would now be required to prepare for the passage of the weft would be to pull forward one of the sets of lisse threads which would draw forward all the odd or even warp threads as the case might be. After the weft thread had been put in, the set of lisses that had been pulled forward would be allowed to fall back and the other set would be drawn forward to prepare for another thread of weft.

As the design of a plain cloth such as we have been considering repeats on two warp threads, only two sets of lisse threads are required to weave it, but in the case of the girdle part of it is woven with a design that repeats on four warp threads and part with a design that repeats on five, so that, as the whole nine work quite independently of one another, nine sets of lisse threads, at the least, will be required to weave this cloth.

It is hardly conceivable that in weaving this girdle the various warp threads were picked out and drawn forward by hand before each thread of weft was put in, for owing to there being as many as 340 of them to the inch in some places, many of them would be completely hidden and buried among the others, and to pick out the right one would be a matter of the very greatest difficulty such as would baffle the most painstaking and patient of mankind.

Knowing that the use of lisse threads was understood at the time that this girdle was woven, and appreciating the practically insuperable difficulties in the way of picking out the design by hand, we should be justified in assuming that lisse threads were

used, even if there was no direct evidence to prove the assumption. There is, however, very conclusive evidence, in the nature of the faults that occur in the girdle, which are such as would be made by pulling forward sets of lisse threads out of their turn, for the faults repeat the whole way across the cloth.

There is one fault in the weaving that is of very particular interest, and which may best be illustrated by the way in which it effects the zig-zag pattern. On one side of the cloth it is not visible, but on the other side the zig-zag pattern appears thus:—

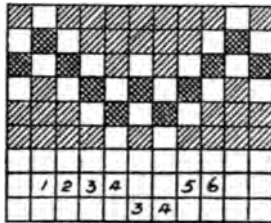


FIG. 8.

If the girdle had been woven by two weavers, one sitting at the back and the other at the front of the loom, this fault would have been detected at once; but if only one man had been weaving it he would not have noticed the fault if it occurred on the back because there is no sign of it on the face.

While it would be practically impossible to weave such a cloth as this without the use of lisse threads, it would not be by any means a straightforward and easy matter working such a design as this with nine sets of lisse threads. Before the first thread of weft was put in, the weaver would have to draw forward the 1st and 6th sets and would have to hold them out while he put his weft across. Before the second thread of weft could be put in (the first back weft thread) he would have to draw forward the 1st, 2nd, 3rd, 6th, 7th, 8th, and 9th, next the 3rd, and 8th, and then 1st, 3rd, 4th, 5th, 6th, 7th, 8th, and so on, for the twelve different combinations required to complete the design.

It will be seen, therefore, that it would be a very easy matter to make a fault by drawing out the wrong set of lisse threads, or failing to draw out a set that should have been drawn forward for any particular thread of weft, and if such a mistake were made while weaving one of the threads of weft making the back, it would not

be noticeable from the front of the cloth. A careful examination of the girdle fails to reveal any such slips of an odd set of lisses, the faults referred to above being the result not of the failure to raise or leave a single set, but the use of one combination of lisses instead of another. In the fault illustrated, the weaver has repeated over again two of the combinations that he has just used, instead of going on to the next in order. He has, in fact, put in three back threads of weft one after the other, to one face thread, so that in the same space as is covered by six weft threads on the face we find eight at the back.

This interesting fault would suggest that some means was employed for working out the combinations automatically, so that all the weaver had to do was to pull forward, before putting in each thread of weft, that one, of twelve levers or strings, which was attached to the combination of sets of lisse threads required for the thread of weft that he was about to weave.

Such an arrangement as this would simplify the weaving enormously, and there seems every reason to believe that something of the sort was used, possibly the weaver did not actuate the twelve strings himself but had an assistant to do it for him, just as boys were used for the same purpose in old hand looms, being called draw-boys on account of their having to draw up the sets of healds as required.

It has already been said that the girdle tapers in width from one end to the other, and this has been effected by gradually cutting out some of the warp threads as the weaving proceeded and drawing the remaining threads closer together, so that the number of threads to the inch remained the same throughout. Where the design repeats on five warp threads, bunches of five have been removed at a time, and where it repeats on four, bunches of four have been taken, so that the design of the cloth has not been interfered with, but the pattern is gradually altered in size and shape, as may be seen by comparing the illustrations of the two ends of the girdle.

Even if this girdle represents the high water-mark of the weaving industry at the date at which it was woven, and although we know of no other examples of anywhere near the same date that approach it as examples of complicated weaving—for the earlier

specimens referred to are only hand tapestry and as such far simpler and more primitive examples of weavers' art—we cannot believe that all the ingenuity that has been expended upon it was the result of one man's work. Probably many of the features of this cloth that have been considered had been in use, possibly in a simpler form, for many centuries before this sample was woven, although we have no record of them.

The earliest example of weaving that has been found in Egypt dates back to the Archaic Period (about 3500 B.C.), and is only plain cloth such as was used for mummy wrappings, but an examination of it shows that all the thread used to make it is two-fold and that lisse threads were used to weave it.

There is another very interesting point that is raised by a consideration of this girdle which has been left to the last, not on account of its comparative importance but because the only evidence that throws any light on the point is of a circumstantial kind. The general impression that is gathered from a glance at the drawings of ancient Egyptian looms is that they were vertical; that is to say, the warp was stretched vertically, but since the Egyptian drawings represented objects as all being on the same plane, it will be understood that a weaver sitting beside a vertical loom would be represented in exactly the same way as a weaver sitting beside a horizontal loom, so that some of the drawings of looms that exist may represent horizontal looms, although at first sight they appear to be vertical.

Whether this girdle was woven on the former or latter variety is a matter that cannot be determined with certainty, but there are points that support the view that the loom was horizontal. The vertical loom has been found the best, on the whole, for hand tapestry weaving; whereas the horizontal is the only form that is used for modern power looms.

The modern form of lisse threads, called nowadays 'healds,' consists of two bars of wood with threads tied between them, in the middle of which there is a loop or eye through which the warp is threaded. The object of this is that the healds can be drawn backward as well as forward. In a cloth containing as many threads of warp to the inch as the girdle, it would be a matter of the greatest difficulty to draw forward exactly the threads that were required

without their bringing with them other threads with which they were entangled, unless these other threads were held down by healds such as have been described. In a horizontal loom the healds will hang vertically, and in many forms of looms a weight or spring is attached to the bottom bar of the heald to keep it taut and to draw it into place after it has been used. Such an arrangement would be very much more complicated to fit up on a vertical loom than on a horizontal, and apart from that difficulty, in a horizontal loom the threads would tend to fall back into place of themselves, which would not be the case in a vertical loom. Anyone who has a practical knowledge of weaving with a large number of warp threads to the inch will realize the great difficulty of getting the warp to split or 'shed,' cleanly for the passage of the weft, and—in view of the very accurate weaving of the girdle and the small number of faults due to imperfect shedding—will readily endorse the suggestion that the girdle was woven on a horizontal loom with nine leaves of healds at least, weighted if not worked positively, and raised by some arrangement analogous to the modern dobby in so far as it drew forward by one motion the various leaves of healds required for each pick of weft, the pegging plan or design of which would be as follows:—

PICKS OF WEFT.



FIG. 9.

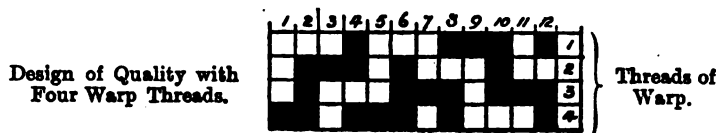


FIG. 10.

## SUPPLEMENTARY LIST OF JETTONS

BY PROFESSOR F. P. BARNARD

As only a few of the rare 13th and 14th century Jettons are included in the above collection at the Institute, I add here descriptions and illustrations of other early pieces, and of certain later examples of typical character or of special interest, taken from my own cabinets. All are of latten, bronze, or copper. The lettering down to No. XXI inclusive is Lombardic.

### I.—Obverse of an English, or Anglo-French, 13th century Jetton.

The crescent and star was a badge of Richard I, John, and Henry III, and appears on the obverse of both seals of Richard I, in the field; on the obverse of the first seal of Henry III, at the beginning of the legend; and on the reverse of the Irish pence and halfpence of John, *e.g.*, Nos. 10 and 12 in the *British Museum Handbook*. Since the origin of this badge does not seem to have been investigated, I venture to submit the following suggestion as to how it came to be used by Plantagenet Kings of England. The crescent and star (or sun, whichever it was) appears on the *deniers* and *oboles* (pennies and halfpennies) of Raymond V, Count of Toulouse and Marquis of Provence, 1148-94). (See *e.g.*, Engel and Serrure, *Numismatique du Moyen Age*, I, 780.) It is found also on the reverse of coins of Raymond II, Count of Tripoli, 1152-87, a member of the House of Toulouse. (*Ibid.*, 912.) Evidently it was a device of that family. The mother, and the paternal grandmother (*Geoffrey of Vigeois*, ed. by Labbe in *Nova Bibliotheca*, Paris, 1657, II, 304), of Queen Eleanor, mother of Richard I and John, were both of the House of Toulouse. Thus it is likely that the crescent and star descended to these kings through their mother. On many of the 13th century jettons of the English sterling type (such as Nos. 1 and 2 in the collection at the Institute) the cross on the reverse is cantoned by two crescents and two stars placed alternately. It is not necessary here to go behind the use



of this symbol as a Plantagenet badge, but it appears in the Roman coinage as the sun and moon on a reverse of Petronius Turpilianus (Smith, *Dict. Gk. & Rom. Biog.*, 1867, III, 1192), and became, of course, a familiar device of the Eastern Empire, whence the Ottoman Turks presumably adopted it. (Didron, *Christian Iconography*, Stokes, I, 159.) See the seal (in Piton, I, 77) of one of the Lombard bankers settled at Constantinople in 1249. There is no legend on either face of this piece. The reverse bears a long cross patty, similar to that on Edward I's Anglo-Gallic penny (*B.M. Handbook*, Nos. 243, 245), cantoned by crosses within circles, which is somewhat reminiscent of the Pax money of William I. The obverse of this jetton is described and illustrated in Rouyer and Hucher, p. 171 and Plate XVI, figs. 134-5; and in La Tour, Nos. 662-6. [Pl. III, 1.]

II.—Jetton of Lombard bankers, such as succeeded the Jews after their expulsion from England in 1290. Both faces are the same, and are mute. The type is the orb, or mound, surmounted by the cross, combined in monogram with a Lombardic *m* (?) and *s* (?) as initials. If these are the letters, they may stand for Bonaventura de Marceio of Siena. (See Piton, II, p. 10.) The cross and initials is a common form of device on the Lombard counters, and may be compared with our merchants' marks. The bezanty border is one of the features of this class of jetton. As this fine piece (together with Nos. III, IV, V, VI, and others) was bought by me at the sale of the Kinberg collection at Amsterdam on July 1st, 1910, it probably was never used in England and may very well be anterior in date to 1290, but is of that century. Jettons of this character are of Italian manufacture. [Pl. III, 2.]

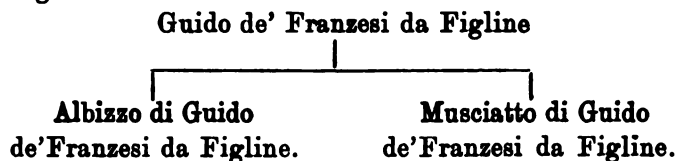
III.—Obverse of a Lombard Jetton of the same class as No. II, bearing a *p* surmounted by a cross. On the reverse is the mound with its cross, which is carried down throughout the mound, and in each of the angles thus formed is a pellet. It is mute on both faces. The same obverse appears with different reverses in Piton (Nos. 113-4), and

with yet another reverse, the shield of the Strozzi (P) family of Florence, in La Tour (No. 707). The reverse of this piece occurs on another counter of the same series, given in Piton (No. 139). [Pl. III, 3.]

IV.—Reverse of a Lombard jetton of the same series as No. II and III. The pack, or bundle, is a common and natural type on these pieces, and is found also on leaden merchants' seals. The obverse bears the device of the Albizzi family, two concentric circles surmounted by a cross. Both sides are mute. This counter is given in Piton (No. 180). [Pl. III, 4.]

V.—Reverse of a Lombard jetton of the same series as Nos. II, III, and IV. The initials are T.S. A fleur-de-lys on the obverse shows that the issuer was a Florentine; *cp.* Piton, No. 146, reverse. Both faces of the coin are mute. [Pl. III, 5.]

VI.—Obverse of a Lombard jetton of the same series as Nos. II to V. The shield is that of the Franzesi family (*paly of six gules and argent, a fess or*) borne by the famous Italian financiers known in France as Biche and Mouche. Piton (II, pp. 100-1) gives cuts of their seals: these display the above arms with the respective legends S[IGILLUM] BICII [FILII] GUIDONIS DE FIGLINO, and S[IGILLUM] MUSCIATI [FILII] GUIDONIS DE FIGLINO. Figlinum is Figline, to the south-east of Florence. This helps towards the following pedigree:—



There was a third son Nicolo. For an account of transactions of this house consult Piton, I, 102-114; and for a notice of the negotiations for an alliance against England conducted in 1297 by these two brothers, see *Trans. Ryl. Hist. Soc.*, N.S., XVII, 178. This obverse is that of Piton's No. 72; *cp.* also his Nos. 73-5. The reverse is similar to that of No. III, but has no pellets.

None of the examples given by Piton have this reverse.

Both faces are mute. [Pl. III, 6.]

VII.—Lombard Jetton of the same series as the preceding five.

Both faces are the same, and are mute. Unknown to Piton, Feuardent, and La Tour. [Pl. III, 7.]

VIII.—Obverse of a Lombard Jetton bearing Androcles and the Lion, a favourite type with this class of counter. On the reverse is an equilateral triangle, base uppermost, surmounted by a cross which penetrates to the centre of the triangle where it ends in a mullet or pierced star. This piece is Feuardent's No. 4975 and Piton's No. 145. Among other reverses or obverses with which the Androcles type is found associated are the fleur-de-lys of Florence (Piton, No. 146; Feuardent, No. 4976); the Lion of St. Mark of Venice (Piton, Nos. 141, 147-152; La Tour, Nos. 719, 723; Feuardent, Nos. 4977-8; Fontenay, p. 57; Rouyer and Hucher, p. 175); St. George of Genoa (Piton, No. 142); the P of Pisa (La Tour, No. 711); the double S of Siena (?) (Piton, No. 143); and the arm holding a crozier, of the Chartreuse at Pontignano (Piton, No. 153). [Pl. III, 8.]

IX.—Obverse of a Jetton with the type of a bear tied to a tree, Feuardent's No. 11041. The legend is *Cest la malle best*. The reverse has the decorated cross within a quatrefoil (familiar on counters of the period), in the spandrels of which are the letters A.V.E.M. for *Ave Maria*. Its date is late 14th century. Some authorities, e.g., Dugniolle (Nos. 27-33), attribute these pieces to Bruges; Feuardent (II, 459), Rouyer, and others allot them to France. There can be little doubt that they are of French, not Flemish, make. Feuardent goes further, and regards them as jettons, or *méreaux*, of the Abbey of Ourcamp in Languedoc, on the ground that the arms of that house display a similar bear. Cp. La Tour, Nos. 1358-68. [Pl. III, 9.]

X.—Obverse of a Jetton of the *Trésor Royal* of France, struck in the second half of the 14th century, displaying four keys in cross. In the 13th and 14th centuries, keys were the

special badge of the French Treasury counters, and survived on the buttons of liveried officials of that department down to the French Revolution. (*Cp.* the keys on the English Exchequer Seal, given in *Archaeologia*, VIII, Pl. XXX, fig. 3.) The legend is GETTES SEUREMENT followed by a dragon, another symbol of guard and security, often found on the locks of coffers in the Middle Ages. The reverse type is the arms of France-ancient on a lozenge set within a quatrefoil, and the legend, LE COMPTE TROUVERES, is a continuation of that on the obverse. This piece, which is Feuardent's No. 1849, is of graceful design and delicate workmanship. It is described and illustrated by Rouyer and Hucher, p. 61, Pl. IV, fig. 30; and La Tour, No. 72, Pl. III, fig. 5. [Pl. III, 10.]

XI.—Reverse of a 13th century Jetton of the *Chambre des Monnaies* of France. The scales are symbolic of monetary affairs, the pellets perhaps of coins or of counters. Both faces are mute. The reverse bears the shield of France-modern surrounded by pellets (Feuardent, No. 2114; Rouyer and Hucher, 52, Pl. III, fig. 21). I have used throughout these lists the conventional term France-modern, but this piece is itself one of many proofs that the three fleurs-de-lys are found in France long before 1364, while France-ancient, in which the field is semy of lys, occurs long after that date, *e.g.*, on 15th century jettons. Among artists, at any rate, there was no rule, and even on Edward III's gold money we find both arrangements. Variants of this jetton have France-ancient. [Pl. III, 11.]

XII.—Obverse of a Jetton, probably of the wife of Philip, Count of Evreux, and, *jure uxoris*, King of Navarre (*d.* 1343), bearing the arms of Evreux and Navarre dimidiated. The legend reads PATER NOSTER QUI ES IN C, and the reverse legend is the same less the final c. On French jettons dimidiation generally indicates the counter of a lady. The type of the reverse is a cross fleurdélisée with bowed limbs, its voided centre enclosing a fleur-de-lys, a form which is not found on jettons till the second half of the 14th century; though it had occurred in the French gold

coinage, on the reverse of the *Chaise* and *Pavillon*, in the reign of Philip VI (1328-50). *Cp.* Feuardent's No. 6351; and see Rouyer and Hucher, pp. 119 *et seq.*; and La Tour, Nos. 343, 346, Pl. IX, figs. 4, 5. [Pl. III, 12.]

XIII.—Obverse of a Jetton of Marguerite, daughter of Raymond IV, Count of Provence, and Queen of Louis IX of France in 1234. The arms are a fleur-de-lys for France, and the coat of Aragon dimidiated. Raymond was a nephew of Peter II of Aragon. On the reverse is the famous coin-type of the *Châtel Tournois*, the nature and origin of which was explained in my lectures on English Numismatics, I, 238-240. Both faces of the coin are mute. This is La Tour's No. 202; and see his Pl. VI, fig. 2, reverse. [Pl. III, 13.]

XIV.—Obverse of a Jetton of Blanche of Navarre, second wife (1349) of Philip VI of France. She died in 1398. The arms are those of France-ancient and Navarre dimidiated. The legend on each face is the same: AVE MARIA GRACIA PLE[NA]. The type of the reverse is that of No. XII. This piece is described and illustrated by Rouyer and Hucher, p. 91; Pl. VIII, fig. 70; and by La Tour, No. 278, Pl. VII, fig. 11. See also Florange, I, 20; and Feuardent III, No. 11517 (still in MS.). [Pl. III, 14.]

XV.—A 14th century French Jetton showing a characteristic reverse of the period. The legend reads GARDES DE FALIR CONTE. On the obverse is the paschal lamb bearing a gonfalon on a cross-headed staff, with the legend AU MOUTON SUI BNATE. The last word is meaningless: pieces of this series often have blundered legends. This is Feuardent's No. 9497, for the lamb and flag type was tentatively placed by him with the jettons of the province of Berri, though it was certainly issued in other districts also, the *aignel*, or *mouton*, *d'or* (which ranged in date from Louis IX, 1226, till 1325 in the reign of Charles IV) being one of the French coins especially imitated by early jettons. The 'Mouton de Berri' was, it is true, the device of that province, and three sheep, two and one, were the charges on the arms of its capital, Bourges (*cp.* La Tour, p. 81;

Pl. XII, Nos. 12, 13, 14); but the lamb and flag, again, is the principal bearing on the coat of Rouen. (*Cp.* La Tour, No. 545, Pl. XIV, No. 15; and Rouyer and Hucher, p. 168, Pl. XVI, No. 132.) See also La Tour, No. 1032, who classes this counter under the *Agnus Dei* type, without reference to any locality. Many examples of these *Mouton* jettons bear evidence of their having been struck at the Tournay mint. [Pl. III, 15.]

XVI.—Reverse of a late 14th, or early 15th, century Tournay Jetton. The legend is O MATER DEI MEMENTO MEI. That on the obverse is the same, but, as the letters are rather smaller, A[VE] M[ARIA] is added to fill up the space. The obverse displays three circles arranged in triangle, one of the symbols of the Tournay mint: see Fontenay, 46; and La Tour, pp. 229 *et seq.* [Pl. III, 16.]

XVII.—Obverse of a Jetton struck either for use in the *Chambre des Comptes* of Dauphiné, or in imitation of such, probably in the time of Louis XI or Charles VIII (1461-98). The arms of France and Dauphiné quarterly occupy the field, and the legend is GETTES ENTENDES AU COMPTE. On the reverse the field is semy of fleurs-de-lys, and the legend reads, in continuation of that on the obverse, GARDES VOUS DE MESCOMPTE. This is practically the same as Feuardent's No. 11318, of which, and others of similar character, he writes 'Imitations nurembergeoises?' The workmanship seems too good for this. *Cp.* La Tour, No. 89, Pl. III, fig. 14; and Rouyer and Hucher, p. 154, Pl. XIV, fig. 122. [Pl. III, 17.]

XVIII.—Reverse of a Flemish Jetton of 1487: a helmed lion supporting the shield of Flanders. The legend is ERIPE ME DE INIMICIS MEIS D[OMI]NE from *Vulgate, Psal., LVIII, 2*. On the obverse is St. Andrew holding his cross before him, with the legend DILEXIS[IT] ANDREAM DOMINUS. The saltire, or St. Andrew's cross, was a device of the House of Burgundy (Favine, *Theater of Honour*, London, 1623, IV, v, 23), and St. Andrew was chosen as patron of the Order of the Golden Fleece, instituted at Bruges in 1429, by Philip the Good, Duke of Burgundy and Count of

Flanders and Holland (1419-67). This piece is probably from the Tournay mint and is Dugniolle's No. 323. [Pl. III, 18.]

XIX.—Reverse of a Jetton of the Flemish mint, issued in 1491. The obverse displays the shield of Philip 'le beau' and and that of his father the Emperor Maximilian I impaled, with Flanders impaling Austria *en surtout*. The legend, which continues that on the obverse, reads DE LARCHEDUC PF[I]LIPE DUC DE BOURG[ONDIE]. The obverse type is the same as that of No. XVIII, with the legend IETT[ON] DE LA MONNOIE [*Mint*] DE FLANDRE'. This piece is No. 442 in Dugniolle, and is described and illustrated by Van Mieris, I. p. 236, fig. 5. [Pl. III, 19.]

XX.—Obverse of a Medalet-Jetton issued in 1430, probably from the Tournay mint, in commemoration of the marriage of Philip the Good, Duke of Burgundy, with Isabella, daughter of John I, King of Portugal: the parents of Charles the Bold. The type is the familiar device of Burgundy, the steel with flints and burning branches. The form of the steel of the period resembled the B of Burgundy. The legend on both faces is AVE MARIA GRASIA PLENA. On the reverse is a small cross potent fleury cantoned by four lys. This piece is practically the same as Dugniolle's No. 69; and *cp.* Rouyer and Hucher, p. 137, and Fontenay, pp. 105, 249, 334, 388. [Pl. III, 20.]

XXI.—Obverse of a Jetton of the household of the Archduke Philip 'le Beau' (see No. XIX), issued *c.* 1486. The shields are those of France-modern, Flanders, Burgundy-ancient, and Austria-ancient. The legend is continuous from one face to the other: IETT [ON] DU BUREAU DES COMDTEs DES || MAISTRES DOSTEL DE MONS[IEUR] LARCHID [UC]. The field of the reverse is occupied by the arms of Philip (see No. XIX) with an escutcheon of Flanders over all. *Cp.* Dugniolle's No. 325. [Pl. III, 21.]

XXII.—Reverse of a Jetton of Nicholas Van Laen, Treasurer of Eleanor, 2nd wife of Francis I of France, sister to the Emperor Charles V and dowager queen of Portugal:

struck in the Low Countries in 1530. The arms are those of Van Laen, with the legend NICOLA[S] VA[NDER] LÆN TRESORI[E]R G[E]N[ERA]L D[E] LA ROI[N]E. This legend begins at the bottom of the coin, on the left-hand side, an arrangement which, though comparatively unusual, is not unfrequently found. The obverse displays the shield of France-modern impaling Spain and Burgundy, with the legend LEONOR[E] ROYNE DE FRANCE. This is Dugniolle's No. 1255, and is described and illustrated by Van Mieris, II, 328. Another counter of this official is given in Florange, No. 50. [Pl. III, 22.]

XXIII.—Obverse of a Medalet-Jetton, issued by the mint at the Louvre, to commemorate the Peace of Edinburgh between France and England, 6 July, 1560. The F is for Francis II of France, and the busts represent him and his wife, Mary Queen of Scots, or possibly their hoped-for offspring. The legend ABUNDANTIA PUBLICA GALLIAR[UM] presumably points to the expected results of the alliance with Scotland and the treaty with England. On the reverse is a standing female, gazing and pointing heavenwards, and resting one hand encouragingly on the head of another woman, seated at her feet. The latter holds an infant, and from her posture evidently is symbolical of the misfortunes of war. To the right of the standing figure lies a heap of discarded weapons with a laurel branch placed in them. In the exergue is an inscription FELICITAS GALLIAE, and the legend reads PIETAS REGIS INVICTISS [IMI]. The types on both faces of the coin are thoroughly characteristic of the classical designs which by this time had become the vogue, and the phraseology of the legends and of the inscription on the reverse, is borrowed from the Roman coinage. The type of the obverse was perhaps suggested by a first brass of Antoninus Pius with the heads of Marcus Aurelius and Lucius Verus, or by a reverse of Tiberius, on which Addison has much to say (*Discourse on Medals*, 1753, pp. 77-82); or, again, perhaps by a first brass of Drusus Junior, alluding to the fecundity of the Imperial Family, and representing the



twin children of Drusus and Livia. (See Stevenson, p. 289.) This piece is illustrated by Bie, Pl. 61, fig. 6; Pl. 62, fig. 1; and Pt. II, p. 185; and *cp.* Feuardent's Plates, I, fig. 10; Fontenay, p. 151; and *M.I.B.H.*, I, p. 98, Nos. 17-19. [Pl. II, 23.]

XXIV.—Obverse of a Jetton of the Emperor Charles V for Flanders. It bears a fine bust of the Emperor, and is dated 1548 on the reverse. The legend is CAROLUS V ROMANOR[UM] IMP[ERATOR] SEMP[ER] AUGUST<sup>9</sup>. The reverse displays the shield of Charles V supported by the double-headed eagle, and the legend reads GECTOIRS DU BUREAU DE L'EMPEREUR: 1548. This piece, which is of Flemish manufacture, is Dugniolle's No. 1742; and *cp.* Fontenay, p. 373. [Pl. III, 24.]

XXV.—Obverse of a Medalet-Jetton, dated 1598, struck in the Low Countries to record the falling away of Henry IV of France from the treaty of alliance made two years before between England, France, and the United Provinces against Spain. The shields are those of France-modern, England, the United Provinces, and Zealand. The legend is DEO DUCE, COMITE CONCORDIA. On the reverse three forearms in plate armour, issuing from a central laurel wreath (or possibly a laureated buckler), hold each a sword. Above the wreath, or buckler, is the date 1598; in the middle of it is the name of Jehovah in Hebrew characters. The legend reads MUTUA DEF[ENSIO] TUTISS[IMA]. This extremely rare piece is Dugniolle's No. 3452, and Van Orden's I, No. 1040. See, too, *M.I.B.H.*, I, p. 173, No. 170; and *cp. ibid.* No. 146, and Van Loon, I, 471. [Pl. III, 25.]

## NOTE ON A VASE OF MINOAN FABRIC FROM ABYDOS (EGYPT)

BY PROFESSOR JOHN GARSTANG

WITH PLATES XIII, XIV

*This preliminary statement is published by request, pending the completion of Professor Garstang's 'Thousand Tombs of Abydos' in which a fuller description and illustration will be found.*

In the spring of 1907, our Expedition was occupied chiefly with the excavation of a portion of the great necropolis of Abydos lying immediately to the north-west of the valley that leads up through the desert, from the township of the earliest dynasties, southwards towards the royal tombs of the same period. The growth of the necropolis on this side was fairly uniform. The earliest tombs are in general those nearest to the city, and the latest are those furthest removed in this direction; the periods represented range from the Old Kingdom to the New. A little past mid way (beyond the Old Fortress called the Shuneh-t-el-Zebib), in an area full of tombs of the middle Kingdom and Hyksos Period, near the edge of the valley, tomb 416 was found and excavated in the ordinary course of work. The gang of labourers was controlled by a foreman of experience, named Ambarak Aqab; this work went on under my personal supervision. The notebook references made during the excavation are in my own handwriting, and the inventory of the contents of the tomb is in the handwriting of the late Mr. Harold Jones.

The tomb was like others of the period: it consisted of a group of six shaft graves, side by side, built at one and the same time. The whole group was protected from the falling sand by a wall descending about 1·50 metres into the sand; and the dividing walls between the shafts, about two bricks thick, descended to about the same depth. At this level the harder gravel bed was reached, and through this stratum the shafts descended to a depth of about five metres without the support of masonry. Thus the shafts were only about half a metre apart from one another; and the partitions were of gravel. The chambers corresponded, being uniformly dug into the south-east ends of the shafts, at the bottom,

so that the six chambers lay practically side by side. As was not uncommon, the chambers were hollowed in a softer stratum of gravel than the roof above; in fact the depth of such tombs seems to have been largely determined by the point at which a conveniently soft stratum was found. This being the case, it not infrequently happened that in the course of time the slender partitions between the chambers fell; or were broken down by plunderers forcing their way through from one chamber to another, thus leaving a more or less continuous cavern, into which access might be gained from any of the six shafts. For this reason, we adopted the habit of numbering such tombs with a single number, distinguishing the various shafts, and, so far as possible, the various chambers, by separate small numbers. Furthermore, it is demonstrable that such groups of graves were constructed and first used in the same historical period. The shafts were first constructed by a speculator or contractor, who only prepared the chambers as they were required.

The contents of the tomb were in this case noticeably free from intrusive features and uniformly characteristic of the funereal arts of the XIIth Dynasty. It is unnecessary here to give the list in detail; it covers six of the inventory sheets. The objects for the most part, are massed together in a common list for the reasons stated above, but in the cases of the third and sixth graves (from the north), it was possible to discriminate to some extent, so that these received each their separate inventory. In the general list there is an unusual number of small glazed objects, including a hedgehog, two cats, several apes and monkeys, as well as a number of crude painted figures representing animals, wrestlers, musicians and so forth. There is a long list of the objects familiar to Egyptian tombs of the XIIth Dynasty; such as Kohl pots of alabaster and of dark stone; grinding palettes of dark stone and of slate; mirrors with wooden and stone handles, etc. Specimens peculiar to the XIIth Dynasty include necklaces of large globular glazed beads, long cylindrical glazed beads (such as were freely used in collars of the middle empire at Beni Hasan), and small beads of amethyst, garnet, etc., with amulets of mother of emerald: also small vases of 'blue marble'—a material hardly found in other periods. Confirming this general

evidence are two cylindrical cylinders inscribed with royal names of Kings Senusret III and Amenemhat III, as well as a private scarab of their period, inscribed with the name of the Steward *Sa-em-pet*. (See Pl. XIV.)

A noteworthy feature of these lists is the uniformity as to date; for we are accustomed, at Abydos, to find evidence of tombs having been re-used once at least, and possibly several times, in ages subsequent to that at which they were constructed. It was only in examining the surface-filling when the excavation was completed, that anything of a different period was discovered; that was however only the foot-end of a glazed Ushabti figure, such as are found littered about the surface of the sand in every direction, and therefore cannot be admitted in evidence. In this general inventory of objects from the common chamber, there are sixty items, not one of which suggests any difference of date or general character.

The third section of the tomb was somewhat better preserved than the rest, and the inventory of this portion reads as follows:—

- (a) Slate Kohl pot with lid, 5·2 cms.
- (b) Slate colour-mortar, 11·6 × 20·2 cms.
- (c) Diorite colour-mortar, 17 × 10·3 cms. with grinder, 4 cms.
- (d) Minoan ('Mycenean' in MSS.) Vase, in fragments.
- (e) Blue glazed 'draught-man holder,' 11 cms.

These objects are, with the exception of (d) similar in general character to others found in the tomb, and occasion no separate comment. The vase (d) which is now on view with some of the contents of this tomb, in the Ashmolean Museum at Oxford (No. E3295), is there described as a '*Cretan polychrome vessel in a style characteristic of the second middle Minoan period.*' (See Plate XIII.)

The sixth portion, that is the most southerly, was also partly separable, and has, accordingly, its own inventory amounting to a dozen items. These again do not call for detailed observation, comprising alabaster Kohl vessels, a standing dark stone vase tapering to the base, of typical middle empire form, two vessels of blue marble or blue alabaster, the use of which material is practically confined to the middle empire, and so forth.

One portion of the tomb alone remained undisturbed so far as ancient plunder was concerned. This was in an upper chamber of the second section, and it owed its preservation doubtless to the fact that the plunderers had gained access to the chambers below by way of another shaft, but had not taken the trouble to open up the shaft in question, and consequently remained unaware of this upper chamber. It contained, however, nothing specially instructive. In it a body had been placed with head to the south, facing west. At the foot were a stone palette with grinder, and a Kohl pot of a dark stone, and near the head were a few beads,—all uniform in character with the objects already mentioned. The subsidence of the chamber at the back made further excavation of it impracticable.

Our present subject of enquiry being the circumstances attending the discovery of the Minoan Vase found in the third section of the tomb, there remains little to be said. Every object found inside the tomb to a number of more than a hundred was of XIIth Dynasty character, and we cannot doubt that the inscribed cylinders of Amenemhat III and Senusret III gave a reliable date to the whole group. There is nothing to suggest that the vase in question is not a contemporary deposit,—in fact any other conclusion would be unjustifiable. In many tombs of this site, the usual mixing of dates might have complicated the argument, but in this case no such difficulty arises. It is proved beyond reasonable doubt that the Minoan Vase was found in a XIIth Dynasty tomb, and is therefore at least as old as the contents of the tomb. It may of course be still older, so far as our evidence is concerned.

The further problem of the actual date in years to which this object must now be assigned, is not in any way connected with the excavation of the tomb. Those who believe that the Hyksos period in Egypt was not as long as tradition would have it, and who eke out the paucity of historical evidences rather by archaeological considerations,—chiefly the changes in forms and character of objects, and in burial customs, (the standard criteria), if any,—between the end of the middle empire and the beginning of the new empire, may place the date of Senusret III as late as 1900 B.C. It must be said at once, however, that the Egyptian sources of

evidence on this point are not satisfactory, because the material is too slight: but even the little material evidence that remains, is, in my judgment, a more reliable basis for chronology than distorted traditions, and the strung-out lists of possibly contemporary local 'dynasties.' The links with Crete provide a much better standard and basis of judgment, for the development of culture there, between epochs now determinable, is well illustrated by a continuous series of archaeological evidences recovered by methodical excavation and research. It is necessary however to bear in mind the inherent difference of local conditions and environment.

The date recorded in the Ashmolean Museum for the second middle Minoan period, which is that of the earlier palace, is 2000 to 1800 B.C. This conclusion agrees entirely with our own view.

## ARE WE JUSTIFIED IN SPEAKING OF A MEGALITHIC RACE ?\*

By T. E. PEET, B.A.

WITH PLATE XV

Since 1872, when General Faidherbe read to the Prehistoric Congress at Brussels his paper on the dolmens of Algeria,† the question of the origin and meaning of the megalithic monuments has been a subject of speculation to archaeologists. The Congress at Stockholm two years later gave a further impetus to the discussion, which continued somewhat spasmodically until the appearance in 1897 of Montelius' *Orient und Europa*, where a definite point of view was laid down which seems to have satisfied many archaeologists and to have provoked but little criticism from the rest. From that date the general question has been inclined to stagnate, though work on particular monuments and groups of monuments has always been in progress. It has, however, just been revived by the remarkably interesting point of view put forward by Professor Elliot Smith in his book *The Ancient Egyptians*, with regard to the origin of megalithic architecture. The last five years, too, have seen much new research, especially in Sardinia, Malta and Syria, and as a result we are far better qualified to decide questions of date and origin than we were in 1897.

The great problem with which we are brought face to face is as follows: Buildings of peculiar types, made of huge blocks of stone, usually unworked, are found in certain parts of a vast geographical area extending from Portugal to Japan and from Sweden to Morocco. What is the meaning of this phenomenon?

Three possible answers suggest themselves. The custom of building megalithic monuments may have arisen independently in

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\* This article reproduces in substance a paper written for the Dundee meeting of the British Association. Owing to lack of time it was impossible to read more than a portion of the paper at that meeting, and it therefore seemed advisable to reproduce it in its entirety.

† *Compte-rendu du congrès d'archéologie préhistorique*, Bruxelles, 1872, pp. 406 ff. The still earlier work of Bonstetten, *Essai sur les dolmens* (Geneva, 1865), should be mentioned.

the countries in which we find it. Or, in the second place, it may have arisen among a single people and spread to others connected with them by trade or other relations. Or, in the third place, the spread of the custom from a single centre over a large area may have been due to an actual migratory movement of the people among whom we are supposing it to have originated.

The first of these theories, that which postulates a number of independent places of origin for the monuments, has found a keen defender in Mr. A. A. Lewis.\* He says: 'The building of dolmens was not confined to one race and the building of circles to another, nor was there any one race which originated and diffused both; but rather that megalithic building was a phase of culture through which many races have passed and which was developed in different ways not only by separate races but also in very restricted localities by different tribes, without regard to any racial differences or connections between them.'

To this theory there are several very serious objections. It is, at the outset, unlikely that a method of building which is to a great extent unnatural, consisting as it does in the use in small buildings of huge blocks of stone when much smaller and more manageable ones would have served the purpose equally well, should have arisen independently among so many peoples. If the phases of culture through which all or even many races pass be examined, it will be found that they are all in some way natural, or even necessary. Thus most nations have passed through a phase of employing copper for the simple reason that copper is more workable and more lasting than flint. In the same way almost all nations have passed on to use iron instead of copper, because it will take a better edge and can be produced in a much harder form. These are natural stages in a rational development. But such an argument cannot be urged in the case of megalithic monuments. The use of huge blocks of stone is not at all a necessary stage in the evolution of architecture. The natural origin of architecture lies in the putting together of stones of convenient size, and this corresponds exactly to what we actually find in the earliest buildings of Crete and Egypt, in which latter place, however, the conditions are complicated by the occurrence of mud brick at a

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\* See *Anthropological Journal*, XXXVIII, pp. 380 ff., and XL, pp. 336 ff.



very early date. Constructions of very large blocks are as a rule the product of the builder who has had a long experience, which has given him the courage to employ, and the skill to fit, such blocks.\* The use of huge stones in an early stage of a people's civilization is therefore an abnormality to be accounted for by some special reason, and it cannot be explained as a phase which many nations passed through as a natural course. That it should arise independently in even a very few countries is unlikely, but to suppose that it did so in a large number, when the very geographical position of these makes collusion evident, is impossible.

Again, whereas Mr. Lewis has laid emphasis on the local differences between the monuments, what is far more striking is their similarity over the whole area in which they occur. For megalithic building is not merely the use of huge blocks of stone, it is their use in particular ways and according to a well-defined system. Its central principle is the employment of orthostatic slabs, i.e., slabs set up on their edges instead of being laid flat. In some instances these slabs form the whole height of the wall, and the building is roofed over with horizontal blocks of stone. In cases where the walls are to be higher, or where the areas to be roofed are larger, the upright slabs form the lowest course, and above them are laid more or less horizontal courses of smaller blocks. In this case the roof is formed by corbelling, i.e., each successive course of blocks projects slightly forward over the last, so that the walls curve inward as they rise, and finally form a vault or dome. More rarely, as in the *nuraghi* of Sardinia and the *sesi* of Pantelleria,† the orthostatic principle is abandoned and roughly-coursed masonry is used throughout.

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\* To the suggestion sometimes made that the pyramids and the palaces of Crete have just as much right to be included under the term megalithic buildings as, for example, the temples of Malta, and perhaps more right than the *talayots* of the Balearic Isles and the *nuraghi* of Sardinia, where the stones are not all of immense size, it may be replied that there is nothing in common between the finely fitted horizontal masonry of Crete and Egypt and the unworked or roughly-squared orthostatic blocks of Malta. As for the *talayots* and *nuraghi*, even if their own construction does not show them to belong to the true megalithic civilization, the other monuments which are found with them, and which have been shown to be the graves of those who lived in them, show every characteristic of the megalithic style. The Cretan and Egyptian buildings belong to an entirely different tradition of architecture, and I cannot for a moment admit the possibility of Montelius' suggestion that the pyramids are merely improved derivatives of the dolmens.

It is worth while to remember, as a characteristic of megalithic buildings, that they are *small* structures built with incongruously large blocks of stone.

† *Monumenti Antichi*, IX, pp. 449 ff.

These same methods of building, particularly the principle of the upright slab, are found in all parts of the megalithic area, and point very strongly to a single centre of diffusion. This argument is strengthened by the remarkable similarities of detail noticeable in monuments existing in countries far apart from one another. Thus the simple dolmen occurs in practically every part of the megalithic area. Other types of monument have an equally wide distribution. The so-called wedge-shaped tomb, for example, common in the province of Munster in Ireland, consists of a simple *allée couverte* running east and west, and widening out considerably towards the west end.\*\* This same widening at the west end is

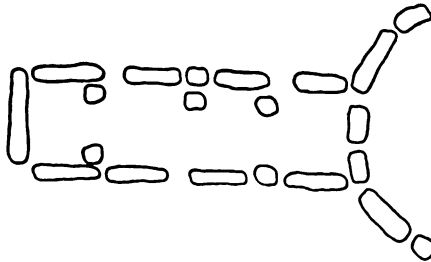


FIG. 1. Megalithic Tomb with curved façade at Annacloughmullin, Ireland.  
(After *Etruria Celtica*.)

also a feature of certain megalithic monuments in Scandinavia,†† Germany, Holland, Portugal, Syria,\* and the Deccan in India.† Again, a feature of many megalithic structures is a curved façade in the centre of which the doorway is situated. Such a façade is seen in the so-called temples of Malta,‡ in the Giants' Tombs of Sardinia,§ the *naus* of the Balearic Islands¶ (where, however, the curvature is very slight), in the horned cairns of Caithness,||

\*\* Borlase, *Dolmens of Ireland*, Vol. I, fig. 23.

†† Montelius, *Dolmens en France et en Suède*, pp. 8-9.

\* Borlase, *op. cit.*, figures an example from the Jaulan in Syria.

† For these and for the dolmens of India in general see *Transactions of the Royal Irish Academy*, XXIV, 1865.

‡ See Albert Mayr, *Die Insel Malta*, fig. 5. For still better examples see the plans to be published in *Papers of the British School of Rome*, Vol. VI, especially that of the largest of the Cordun buildings.

§ e.g., Mackenzie in *Ausonia*, Vol. III, p. 36, fig. 21.

¶ See the *Nau d'Es Tudons*, Cartailhac, *Monuments primitifs des îles baléares*.

|| Montelius, *Orient und Europa*, fig. 125.

in the long barrow of West Tump in Gloucestershire, in the grave of Annaclochmullin and the cairn of Newbliss\*\* in Ireland, and in a tomb at Maughold in the Isle of Man.††

A further resemblance in detail between monuments far apart is to be seen in the small holes or windows which so often occur in one of the end uprights, or in those which sometimes divide a long grave into sections. Such windows are common in the dolmens of India.§ They are found in the Caucasus,‡‡ Palestine, Syria, §§

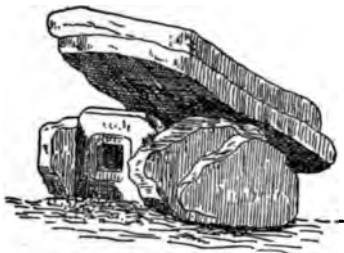


FIG. 2. Holed Dolmen at Ala Safat, Syria. (After De Luynes.)

Sardinia, ¶¶ France ||| and Sweden.\*\*\* There are good examples in our own country in the barrows of Avening and Rodmarton, ††† in the dolmen of Plas Newydd in Wales, and in the monument known as Orry's Grave in the Isle of Man. ‡‡‡ It is not impossible that the famous pierced stone known as the Lanyon Quoit, in Cornwall, at one time formed part of a megalithic tomb of the type under discussion. The peculiar cup-markings sometimes found on the megalithic monuments form another link between far distant countries, for they occur in Palestine, North Africa, Spain and Portugal, Corsica, France, the British Isles, Germany and Scandinavia.\*

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\*\* Borlase, *op. cit.*, figs. 269 and 278.

†† Kermodé and Herdman, *Manks Antiquities*, fig. 17.

§ See *Trans. Royal Irish Acad. loc. cit.* The double dolmen of Coorg figured by Montelius *op. cit.* is a good example.

‡‡ Borlase, *op. cit.*, Vol. III, pp. 722 ff. Also *Matériaux pour l'histoire de l'homme* 1885, pp. 545 ff.

§§ De Luynes, *Voyage à la Mer Morte*, Vol. I, p. 135.

¶¶ *Ausonia*, Vol. III, fig. 30.

||| *Anthrop. Journal*, 1910, p. 337.

\*\*\* Montelius, *Dolmens en France et en Suède*, p. 9.

††† *Archaeologia*, XVI, p. 382, XLII, pp. 216-7; *Proceedings. Soc. Ant. Lond.*, 2 ser. II, p. 277.

‡‡‡ Kermodé and Herdman, *op. cit.*, pp. 48-9.

\* Montelius, *Orient und Europa*, p. 26 ff. The Maltese examples probably serve an entirely different purpose, being merely ornamental.

These remarkable resemblances of general principle and of detail are not due to mere coincidence. They can only be explained by the supposition that megalithic architecture had a single origin, from which it spread into the countries in which we find it.

The date and geographical distribution of the monuments both point to the same conclusion. One often hears the careless statement that they are of very various dates. This is not strictly correct. Those of Europe and Africa mostly begin in a single period—the end of the Stone Age, or the transition to the era that followed it. To this period may be assigned, for example, the monuments of Malta, many of the *nuraghi* and Giants' Tombs of Sardinia, the monuments of Spain and Portugal and of France, the Long Barrows of England, and the dolmens and more complicated tombs of Germany and Scandinavia. For other examples, such as those of the Caucasus and the Crimea, we are entirely without evidence. Even in Africa, where some of the tombs are certainly of the Iron Age, there are others which are earlier, showing that the production of megalithic monuments in this region may well have *begun* at the date we have specified above. The existence of megalithic monuments of late date can never be an argument against derivation from a single source so long as it cannot be shown that there are no early examples in the same district. Thus in Algeria we know that there are some dolmens which have yielded objects of iron, but this does not justify us in supposing that the dolmens of Algeria all belong to the Iron Age. Only a very few out of many hundreds have been excavated, and MacIver has given reasons for thinking that the parts of the cemeteries dug are the latest and not the earliest.† So in India, too, several of the dolmens excavated are said to have contained iron, but this is no argument for the late date of the rest, and until many more have been explored we have no ground for asserting that there are no dolmens of the late stone or early metal age in India.

Thus the argument from the date of the monuments, so far from telling against the idea of their having a single origin, is rather in favour of that idea, at any rate in Europe, where the earliest of them in each country all date from one period—the end of the Stone Age.

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† See MacIver and Wilkin, *Libyan Notes*, p. 93.

The argument from their geographical distribution is even more convincing. If we omit the Japanese examples, which we shall have to consider later, we may say that they begin in India and move west to Persia, Syria and Palestine, whence a by-path leads to the Caucasus, the Crimea, and Bulgaria.\* The main line keeps to the north coast of Africa, running through Tripoli, Tunis, Algeria and Morocco. Thence it branches off to the north to Malta, Lampedusa, South Italy, Sardinia, Corsica, the Balearic Isles, Spain, Portugal and France, and finally up to the British Isles, Scandinavia, and the German shores of the Baltic. If megalithic monuments arose independently in all these regions, it is an extraordinary fact that they should lie, as they do, on the shores of a long natural sea route while the centre of Europe is entirely free from them. Surely the only possible explanation of their peculiar distribution is that they arose from a single source and thence spread into distant parts.

If this is the case, it only remains to account for their distribution over so wide an area. And here, as we saw at the outset, two possible explanations suggest themselves. Either they were spread among various peoples by the influence of relations set up by trade, or they were introduced into various countries by a single race in the course of a great migratory movement. These two theories we may for convenience of reference describe as the influence and the migration theories respectively. The former seems to have been regarded with the more favour by archaeologists, and yet it is not easy to see why, for it involves several very grave difficulties.

In the first place, were the countries which lay scattered along the great sea route which we have described in close enough touch with one another to account for the spread among them of megalithic building? No doubt certain trade relations existed even in neolithic times, but though we are apt to talk rather freely of the early trade routes, we have often little evidence to support our ideas. Within certain circumscribed areas, such as the Aegæan, a lively trade is known to have existed in the Bronze Age, but we have no right to push this back into the earlier periods or to apply

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\* This is merely a description of their distribution, not of the direction in which they actually moved.

it to far wider areas, except in cases where we have definite and sure evidence. Almost yearly we are finding that some material once supposed to have travelled hundreds and even thousands of miles by way of trade occurs in a natural state much nearer home. Thus the jadeite used in the manufacture of stone axes at Alba in North Italy was once supposed to have come from the east, but the raw material has now been shown to exist in the Alps and Apennines only a few miles from Alba\*. Archaeologists have pointed, moreover, to the peculiar kind of turquoise, called *callais*, which occurs in certain megalithic tombs of France and Portugal, as a proof of wide trade relations in the megalithic period. But it has to be remembered that this stone has been found in no megalithic tombs except those of the countries mentioned, and that the idea that it came from the east is the purest assumption. It is far more probable that it occurred in a native state in France or in Portugal, or even in both.

It was probably the discovery of copper which did more than anything else to improve trade relations between one country and another. Flint was to be had in some form in almost every country, but copper was of such paramount importance in the struggle for existence that its importation became almost a necessity for any country which had not its own supply. Thus the trade of the early metal age was largely a necessary product of that age, and proves nothing with regard to the trade of the neolithic period. This being the case, it is far from certain that in the neolithic age the relations between the various parts of the megalithic area were strong enough to account for the spread of this remarkable custom. We have an excellent test case in Malta. Here, copper seems never to have been introduced at all, the only flint found is of the wretched quality which the island itself provides, and there is no trace whatever of trade or foreign influence of any kind. And yet Malta possesses some of the finest megalithic monuments in existence. The only possible explanation is the perfectly simple one that Malta formed one of the bridges used by a race who were builders of megalithic monuments in their migrations from Africa to Europe, or vice versa, and that a part of the race remained there and built the famous megalithic temples. The argument is

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\* *Atti del Congr. Internaz. di scienze storiche*, Rome, 1903, Vol. V, pp. 357-371.

rendered more cogent by the fact that excavation is each year making it more probable, if not certain, that these builders of megalithic monuments were the earliest inhabitants of Malta, and that they brought the custom with them when they entered the islands.

On the other hand, the theory that the monuments were introduced by trade relations involves the assumption that such relations existed in the neolithic period over a very large area, and moreover, that these relations were strong enough to pass on not only products but customs from one country to another. If the upholders of this 'influence' theory could really imagine what this involves, they would probably be surprised by their own boldness. In the history of civilisation it is natural that any discovery which confers a real benefit on man should tend to spread. Thus the use of copper tended to spread, the discovery of edible cereals tended to spread, and the employment of the horse as a beast of burden tended to spread. But it is hard to see what attraction there was in megalithic monuments which caused them to spread, or what advantage their inventors could have in forcing their diffusion. Thus, though the traders of one part of the megalithic area might have been interested in finding a market for their copper in some other part, they would have no possible reason for wanting to persuade their customers to use megalithic monuments for the burial of their dead, nor would these latter, even if in the course of conversation they heard that such monuments were used elsewhere, or actually saw them in place, gain any advantage by adopting them themselves.

A further point which is apt to be overlooked is that the trade which, according to the advocates of this theory, brought the megalithic monuments cannot, from their geographical position, have been anything but a sea-borne trade. Now a sea-borne trade brings commodities rather than customs. Thus we can imagine that a people who lived on the confines of the nation who discovered the use of cereals, or the domesticating of animals, would be likely to adopt the new discovery, for they would have every opportunity of seeing it at work and appreciating its value. On the other hand, a people separated from the discoverers by a long stretch of sea would have far less opportunity of adopting the new discovery

as they would hear of it only from occasional travellers and traders. Thus it comes about that a sea-borne trade will rapidly diffuse a commodity such as copper or gold, but is at a disadvantage in spreading a mode of living or a custom, even when this happens to be a really useful one. Much more is this true of a custom which is not in itself of any value to humanity, such as the use of megalithic monuments.

To this it may perhaps be replied that what this trade spread was the use of stone for building purposes, and that as the only kind of architecture then in vogue was megalithic, this was the form in which the new discovery spread. In answer to this it has already been pointed out that megalithic architecture is an unnatural and abnormal system, depending for its origin on peculiar circumstances. It is unthinkable that the many peoples who, we are to believe, were taught by trade to use stone should all have used it in huge unwieldy masses instead of building with smaller pieces, which are far more easy to obtain and far easier to set up. This trade theory would, further, not account for the exact similarity of the monuments in far distant parts unless we are to understand that the actual monuments were conveyed from one country to another by ship and set up by foreign workmen sent over for the purpose.

There is another even more serious objection to what we have called the 'influence' theory. It overlooks the fact that megalithic architecture is in the main religious and funerary in character. We know that in certain cases, such as the *nuraghi* of Sardinia, and probably the *talayots* of the Balearic Isles, it was applied to the houses of the living, but more usually its aim was to provide a temple for the gods or a tomb for the dead. In origin it was almost certainly funerary, as may be seen from its simplest and oldest manifestation, the dolmen. Among primitive peoples nothing is more sacred than the rites connected with the burial of the dead. There is nothing in regard to which early races are more conservative and in which they oppose more violently change or modification of any kind. Yet the advocates of this influence theory would have us believe that, not merely in one country but in many, the inhabitants were induced by mere foreign influence to make a complete change in their methods of burial. In other



words, the people of Spain, hearing from traders that the people of Algeria or elsewhere were accustomed to bury their dead in dolmens, gave up their ancestral custom of interring the dead in a trench in the bare earth, and all the associations connected with it, and adopted the dolmen. This seems quite incredible.

It is curious that while so many archaeologists are wont to point to similarity of burial customs such as the rite of contracted burial as a proof of identity of race, they should fail to see that the equally strange custom of burying in dolmens has precisely the same cogency.\*

The influence theory has lately been presented in a very attractive form by Professor Elliot Smith in his book *The Ancient Egyptians*.† He there advances the theory that the building of megalithic monuments in the Mediterranean was an attempt to imitate the accomplishments in stonework of the Egyptians, and that megalithic monuments did not appear until the aeneolithic age because the rise of architecture followed the discovery of copper in Egypt. This theory is by no means free from difficulties. In the first place, to say that copper was discovered in Egypt is still an assumption, and many archaeologists find it hard to accept the paradox that the use of copper was discovered in a country where no copper existed.‡ In the second place, proofs of the early

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\* It should be noted that the converse of this proposition is not necessarily true. Thus two peoples who use the contracted position are probably sprung from a common ancestor. On the other hand there may be peoples also sprung from the same ancestor who no longer use this position. But they gave it up by a process of internal development in burial rite and not at the suggestion or dictation of traders. In other words diversity of custom is not necessarily a proof of diversity of race, but only of a long period of separation. The megalithic people, like their neolithic predecessors in Europe, often used the contracted position. This suggests that they were in remote origin not unrelated to these predecessors, an idea which is confirmed by the similarity of the skull types. In this case the use of megalithic monuments must have been evolved among them after the first (early neolithic) branch had already broken away from the common home in Africa or elsewhere.

† pp. 168 ff.

‡ The Egyptian copper of course came, in dynastic times at least, from Sinai, and it is clear that King Mersekha of the 1st Dynasty carried on mining operations there. But we have no evidence to show that the Egyptians were the first people to mine the metal there. It is most unlikely that they should have discovered a new material in a country in which they did not live and to which they had no incitement to go until they heard that they could there obtain a material whose value they had already learnt by experience. That the Sinaitic peninsula was at this early date in other hands is clear from the statement of Mersekha himself when he tells us he had to repel the attacks of the local tribes. These were perhaps the lawful possessors of the mines.

[Copper in the form of carbonate, chloride, etc., is present in the gneisses and schists of the Eastern Desert, and there are old workings at Absiel and Abu Hamamid. See W. F. Hume, *Preliminary Report on the Geology of the Eastern Desert of Egypt*, 1907, pp. 56-57. Ed.]

relations of Egypt with even so important a centre as Crete are scanty and unconvincing, and it is therefore improbable that Egypt was in such close relations with the far less important parts of the Mediterranean as this theory would require. In the third place, Egyptian and megalithic architecture are so entirely and essentially different that it is impossible to derive one from the other. In Egypt we can trace the rise of architecture from the simple mud-brick work of the early first dynasty to the fine stone temples of the sixth, to which latter period Professor Elliot Smith assigns the influence which created the megalithic monuments. In all this there is nothing which bears the slightest resemblance to the buildings of huge unworked blocks found in the megalithic area. It is true that in Egypt very large blocks of stone were sometimes used, but their use was neither original nor essential, while in the megalithic monuments it was both. In the supposition that other peoples learned the art of using stone from the Egyptians there is nothing radically impossible, but that any nation was foolish enough to use vast unwieldy blocks of stone where smaller ones would have served equally well, just because the Egyptians used large blocks in their temples, is incredible. The fact is that megalithic architecture is far too vast and homogeneous a system to be explained as a mere effort to imitate some already existing type of building. Such an explanation will not account for the occurrence of such a form as the dolmen, which incidentally has no resemblance to any Egyptian building, in countries so far apart as Syria and Sweden. Where Professor Elliot Smith's theory really fails is in not recognising that in megalithic architecture the essential point is the size of the stones. It is hardly possible to avoid the conclusion that for the people who built these structures great stones themselves had some particular meaning and sanctity. The very existence of menhirs of vast size is a testimony to the truth of this. The discoveries in the so-called temples of Hagiar Kim and Mnajdra in Malta show that pillars of stone were there worshipped,\* and if great stones had a religious value as such, it is natural that they should have been regarded as peculiarly fitted for use in building the abodes of the dead.

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\* See Evans, *Mycenaean tree and pillar cult* in J. H. S., XXI, pp. 196-200; *Mayr, Vorgeschichtliche Denkmäler von Malta*, p. 723.

Such are the difficulties with which any attempt to explain the megalithic monuments as due to trade or similar influences is confronted. We are thus driven to adopt the third of our possible explanations, namely, that megalithic building was originally the property of a single race and was carried from one country to another by members of that race in the course of an immense migration. If there be any objections to this they are those of feeling rather than those of reason. Archaeologists are, perhaps rightly, a little nervous about postulating great racial movements in early times. Yet the same people are often only too ready to assume the existence of long trade routes in these remote periods, forgetting that to a great extent trade, for primitive peoples, is a luxury, while migration is often a condition of existence. After all, there is nothing impossible or even improbable in the idea of a great migration covering the whole of the megalithic area. Many archaeologists now talk confidently of a very similar but even greater migration which gave to the Mediterranean and other parts of Europe their early neolithic population. The invasion of Central Europe by the so-called Alpine Race is almost an established fact, and in mediaeval times the Arabs covered in their great migrations a considerable part of the actual megalithic area.

If such movements as these were borne in mind the idea of a migration over so large an area as that postulated would lose its terror. After all, the area actually covered is not so large, for in most cases it concerns only the coasts. The whole of Central Europe is left untouched, and even on the shores of the Mediterranean, which must have been somewhere near the centre of the movement, large portions of country such as the Aegaeon, Greece, Thessaly, probably the greater part of the Balkans, the whole of Italy except a small corner, and, so far as we know, the whole of Asia Minor are entirely unaffected. In Africa the north shores alone seem to have been affected. In Asia it is difficult to be precise, for exploration is yet in its infancy. Syria and South India must certainly be included in the area, and there are apparently traces in Persia and elsewhere. We do not know enough of the megalithic monuments of Japan\* to say whether the movement spread as far east as that country, and it is perhaps

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\* *Archaeologia*, LV, pp. 439 ff.; *Anthrop. Journal*, 1907, pp. 10 ff.

better to reserve judgment until we have further evidence as to Japan itself, where incidentally the simple dolmen has not yet been found, and as to the countries which separate Japan from India.

The criticism which Montelius applied to this migration theory in 1897, even if valid at the time, could hardly be considered so now.\* He says that the builders of the megalithic monuments cannot all belong to a single race, for 'in Europe at that time dwelt Aryans, but the Syrians and Sudanese cannot be Aryans.' Now, it may be true that there were Aryans dwelling in Europe at the time, but they were not the only race dwelling in Europe. Moreover, it is precisely in those parts of Europe where Aryans were not living that megalithic monuments appeared, while there is no trace of them in the parts where Aryans were living. He further asks: 'If these forms were built by Aryans, why do they fail to appear in so many Aryan lands?' Here he is fighting a shadow, for no one supposes that they were built by Aryans, and it is precisely because they were not that they do not appear in Aryan countries. Similarly, when Montelius asks 'Why do megalithic monuments occur among the Kelts of the British Isles and France, but not among their close relations in South Germany?' we reply that, strictly speaking, they do not occur among the Kelts of the British Isles, for they were already there when the Kelts came.

Such, as far as I know, is the only criticism which has been made of the migration theory of the megalithic monuments, and despite the high authority from which it comes it seems to leave the theory quite unscathed. Nevertheless, it seems to have been accepted in silence, for since that time until quite lately no voice has been raised to protest. Indeed, one of the latest writers on the subject, Déchelette,† seems to consider the matter as so certain that it needs no discussion, for he says of the single race theory, 'Anthropological observations have long ago destroyed this risky hypothesis.' Unfortunately he is so convinced of this that he omits to tell us what those observations are. The only anthropological observations which can possibly bear on the question are the

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\* Montelius, *Orient und Europa*, p. 30 ff.

† *Manuel d'archéologie préhistorique celtique et gallo-romaine*, p. 427.

measurements of the bodies actually found in megalithic tombs. Not many measurements have been taken, but those that have certainly do not destroy the hypothesis of a single race. On the contrary, they rather confirm it. The type of skull found in the tombs shows a strong tendency to dolichocephaly. Thus a set of skulls from the Algerian dolmens ranged in cephalic index from 70.5 to 84.4,\* the average being 75.27, and most of the skulls lying within a few units of that average. Ten skulls from the Hypogeum of Halsaftieni in Malta ranged from 66 to 75.1, the average being 71.84.† A series of British skulls, mostly from long barrows, ran from 67 to 77.‡ Similarly the skulls from the Scandinavian megalithic tombs are mainly dolichocephalic. In France the type seems more variable, especially in the dolmens of Lozère, where distinctly brachycephalic heads occur. This fact, so far from disproving the idea that the dolmens were spread by a single race, is not even surprising, for wherever the megalithic builders went they were certain in course of time to become contaminated by intermarriage with the other races with which they came in contact. In many cases we shall probably never be able to detect this contamination, for, as Professor Elliot Smith has rightly pointed out, the megalithic builders would in many cases be of much the same type as the races with whom they were brought face to face. It is precisely in such places as France, where we know there were brachycephalic people dwelling at a comparatively early period, that we are bound to find traces of intermixture. Hence the finding of brachycephalic types in the Lozère does not in any way affect the truth of the theory we are here defending. In fact, it is doubtful whether any evidence based on the occurrence of intrusive types of skull would be really fatal to that theory. If we found that the megalithic tombs of one country gave distinctly different types from those of another, and that in each country the megalithic tombs gave the same types as the non-megalithic types of the same period, the single race theory would be endangered. What we actually have is, as far as we can judge from very scanty observations, a fairly homogeneous type of skull over the whole

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\* Faidherbe's measurements, repeated by MacIver in his *Libyan Notes*, Plates 18-19.

† Zammit and Peet, *Small objects found in the Hypogeum of Halsaftieni*, p. 24.

‡ Sergi, *Europa*. I have not the book by me to give the page reference.

area examined, with intrusive exceptions in France; and this is precisely what our theory would lead us to expect. The occurrence of 'Giza traits' in one or two of the Algerian skulls to which Professor Elliot Smith refers is in complete harmony with his own theory of the spread of the 'Giza race' in the Mediterranean.\*

In suggesting a single place of origin for the monuments, we perhaps lay ourselves open to a request to say where such place of origin was. Montelius conceived the dolmen as coming from the east, i.e., from Asia, and he has been generally followed. Reinach, in his remarkable paper *Le Mirage Oriental*, protested against this, and suggested that the megalithic monuments arose in North Europe.† He argued that the earliest types, such as the dolmen, occurred most frequently in Scandinavia and became rarer as one moved south. This last statement is true of Germany, but it goes no further, for the simple dolmen was known even at that time in South Italy, and it has since been found in Malta and Sardinia. The argument sometimes urged that the movement was from north to south, because in France the more northerly monuments are neolithic in date while the more southerly belong to the copper age, is fallacious, because copper may well have been introduced into the south of France earlier than into the north.

Mackenzie seems inclined to suggest North Africa as the original home of the megalithic monument.‡ It is possible that he is right in this, and that, just as in the early neolithic period, some natural phenomenon, perhaps the decrease of rainfall in what is now the Sahara, drove the hordes of North Africa into the islands of the Mediterranean and into Europe, so, at the end of that period, a further decrease produced a second great migration and gave us the megalithic monuments. Yet, however probable this may seem, it remains, and perhaps always will remain, in the region of conjecture.

There are many points in connection with the megalithic monuments which are not yet clear, and probably never will be. The present paper is nothing more than an attempt to account for the facts as we have them. Future discoveries may enable us to

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\* *Ancient Egyptians*, p. 158-9.

† In *Anthropologie*, 1893, pp. 557 ff.

‡ *Papers of the British School of Rome*, V, p. 136.

pronounce more definitely. One thing, however, is certain, namely, that in this question *a priori* reasoning based on insufficient knowledge of the facts can never lead to truth. It would place discussion on a much higher level, would all those who wish to take part in it begin by making a minute study of such works as those of Pinza, Taramelli, Nissardi and Mackenzie on Sardinia, or of those of Zammit, Tagliaferro and Ashby on Malta, to mention only two small regions of the great area in which megalithic monuments occur.

## A CYPRIOTE FIBULA OF THE EARLY IRON AGE, NOW IN THE ASHMOLEAN MUSEUM

By JOHN L. MYRES

### PLATE XVI

In the last volume of these *Annals* (pp. 138-144) I submitted a note on a type of fibula of the Early Iron Age, apparently peculiar to Cyprus, but derived, as I ventured to suggest, from one of those western types of fibula—called *fibula serpeggiante*, *fibula a gomito*, by Italian archaeologists—which have one or more loops in the bow in addition to a spring coil at the junction of bow and pin.

The transition from an elastic loop of this kind to a solid knob seemed to me to be recorded in one extant example of this type (now in the Cesnola Collection in New York), which has the solid knob hollowed on either side as if to copy the inner surface of such a loop. This detail conveys the impression that the maker of this fibula had not yet wholly forgotten that this part of the bow was properly intended to be elastic.

Since that note was published, another example of this type has been acquired by the Ashmolean Museum from Dr. Max Ohnefalsch-Richter, who obtained it from a native of Cyprus, together with a small pair of bronze tweezers which seems to be Graeco-Roman. He was not able, however, to learn any trustworthy account of its discovery. By the kindness of the Keeper of the Ashmolean Museum, I am permitted to publish it here.

The interest of this example is that it represents a stage of degeneration intermediate between that of the New York fibula (*Annals* III, Pl. XXXII, 8) and the commoner variety (Pl. XXXII, 4-7) in which the knob is pear-shaped or olive-shaped, and has no lateral hollows. Here, though the hollow exists, it no longer has the form of a loop, but is circular in plan, and a shallow cone in cross-section. The maker, that is, seems to have intended to copy a fibula like that in New York, but did not understand the meaning of the lateral hollows, and used the simplest means—an obtuse-angled drill—to produce the same general effect. From



this stage it was but a small step to omit the hollow altogether, as in the common variety; a fragmentary example of which, from the Cypriote tomb which I published in *Annals*, Vol. III, pp. 107-117, was the occasion of my former note on this type of fibula.

In the course of a long correspondence about this fibula and other matters, Dr. Ohnefalsch-Richter has called my attention to three points in my former note.

(1) He thinks that I ought to have quoted explicitly some remarks on this type of Cypriote fibula from his paper in the *Zeitschrift für Ethnologie* XXX, 1899, p. 342, cf. fig. xxv. At his request I give this reference now, but I am still under the impression that the eighteen lines which he devotes to this type in the *Zeitschrift* are in essentials an expansion of our joint work in the *Cyprus Museum Catalogue* (Oxford, 1899), p. 138; and this I duly quoted (*Annals*, Vol. III, p. 139, note 1).\*

(2) He thinks that I ought to have quoted explicitly his remarks in the same paper (pp. 330-1, fig. xxii, see also p. 36) on the Cypriote tomb, now in the Leipzig Museum, which I discussed in *Annals*, Vol. III, pp. 107-117. I am sorry that I omitted to do so; and particularly that I omitted to verify the assurance which I had from him formerly, that the tomb was unpublished, and that, though he intended to publish it himself, in a long delayed volume, I was free in the meanwhile to write about it if I pleased. At his request I name now this previous 'publication' of the tomb—it occupies just twenty-five lines on pp. 331-2 of his paper. I take also this opportunity of referring the reader to my former note, in which Dr. Ohnefalsch-Richter's former interest in this tomb was in fact fully acknowledged.

(3) He also thinks that I ought to have mentioned, in connexion with this tomb, an essay on the Sigynnae by George Colonna-Ceccaldi, published in his *Monuments antiques de Chypre, de Syrie, et de l'Égypte*, 8vo, Paris, 1882. I am the more glad to make good this omission, because I know the book well, and have a high respect for the memory of Ceccaldi. But Ceccaldi's

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\* On reading his paper again, I find that in a footnote (i.e. note 3) he compares Sicilian fibulae, quoting B. Patroni, *Bull. Palest. Ital.*, 1896, p. 32, fig. 30, but he gives no details or explanation.

suggestions about the Sigynnae did not seem to me to be of much value, and as I was not conscious that I owed anything to his essay, I did not see any need to quote it, in discussing a type of spear which had not been discovered when he wrote. After reading it again, I think so still; but at Dr. Ohnefalsch-Richter's urgent request, I take the first opportunity of calling public attention to it: regretting only that, if it really anticipates later studies, Dr. Ohnefalsch-Richter did not himself quote it when he 'published' this tomb in 1899.

## SOME CULTS OF PREHISTORIC EGYPT

## I

By PERCY E. NEWBERRY

On certain examples of the Decorated\* Pottery of Prehistoric Egypt are found drawings of ships† with emblems or cult-objects figured at their mast-head (fig. 1). These ships are apparently



FIG. 1. Decorated Vase (Newberry Collection).

\* On this class of Pottery see Petrie, *Diospolis Parva*, p. 15.

† When drawings of these objects were first described and published objections were raised to identifying them as boats (Cecil Torr, *Sur quelques prétendus navires égyptiens*, in *l'Anthropologie* IX [1898], p. 83). But, as Prof. Petrie remarks 'the discovery of much larger and more elaborate paintings on the walls of a tomb at Hierakonpolis [*Hierakonpolis* II, pl. LXXV] have abundantly proved that we have here the earliest shipping yet known' (*Diospolis Parva*, p. 15). De Morgan (*Recherches sur es origines de l'Égypte* I, 1896, p. 161); Schweinfurth (*Ornamentik der ältesten Cultur-Epoch Ägyptens in Verhandlungen der b. Gesellsch. für Anthropologie, Ethnologie und Urgeschichte*, 1897, p. 400); Capart (*Les début de l'Art en Égypte*, 1904, p. 108); and most other Egyptologists agree that these drawings represent boats. Loret, however in the *Annales du musée Guimet*, XIX [1906], pp. 178-175, still refuses to admit them to be boats and asserts that they are villages with shrines. The drawing that he gives of one of these objects (p. 175, fig. 1) has been, it should be pointed out, adapted to suit his theory for he has actually omitted to show the tying-up rope at the prow and the three steering oars at the stern (!) and in place of the Elephant ensign he gives the Harpoon. His interpretation of the design given in fig. 2, p. 175, is based on this inaccurate drawing and is, therefore, most misleading. The particular boat that he figures I give in fig. 2, and I would advise those interested in the matter to compare my tracing with Loret's drawing.

large vessels or galleys with from twenty to sixty pairs of oars apiece. The prow of each vessel is decorated with one or more tree branches stuck upright upon it, and hanging from the prow is shown, in several instances, the end of the tying-up rope. At the stern, in two examples, are figured large steering oars (fig. 2).

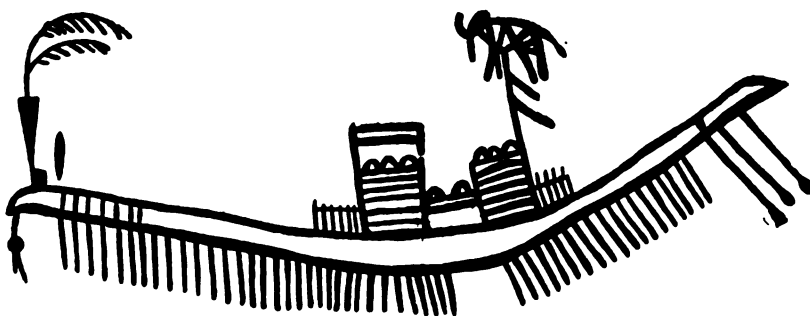


FIG. 2. Boat on a Vase in the Ashmolean Museum.

Amidships each boat has two deck-cabins, and at the back of the aft-cabin is shown a pole, on top of which an emblem or cult-object is fixed; from near the top of, or from half-way up, the pole, two pendants are suspended. These poles correspond to the poles or 'perches' which were surmounted by sacred emblems in historic times, and the two pendants then appear as leopards' tails (fig. 3). From the fact that these ships carry sacred emblems



FIG. 3. The Sacred Perch.

there can be little doubt that they were sacred vessels used by the priests of a cult for the gods' journeys or visitations up or down river: that such visitations were of common occurrence, especially in early times, is proved by the inscriptions on the Palermo Stone,† where a 'visitation' is given as the principal event of certain years of the reigns of kings of the First Dynasty. The form of these

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† Schäfer, *Ein Bruchstück Altägyptische Annalen*, p. 8.

sacred boats on the Palermo Stone is shown in fig. 4, and alongside I give a drawing of the Manset-barque of Ra as it appears in the Pyramid Texts. It will be noted that in the latter we have the two deck-cabins with Falcons on their perches above them. The brick substructure for a large sacred vessel, dating from the reign of



FIG. 4. Sacred Boats: (a) Palermo Stone; (b) Pyramid Texts

Ne-woser-re, was cleared by Borchardt at Abusir in 1901.‡ In later times models of these sacred boats were constructed and were carried in procession by the priests at religious festivals. In one case a model of the prehistoric ship with the cult-sign upon it survives into historic times; this is in the ensign of the Seventh Nome of Lower Egypt, which represents a harpoon and boat surmounting the sacred perch (fig. 5).



FIG. 5. Emblem of the Harpoon Nome.

The vases upon which these prehistoric cult-signs are drawn have been found in graves from Kostamneh in Nubia in the south, to Giseh in the north; they are very rare, and the average is perhaps not more than two or three per thousand graves explored. They belong to a class that is made of a peculiar kind of pottery, which in paste, colouring and decoration is unlike any other pottery that has been found in the Nile Valley.\* So foreign does it appear that Professor Petrie at first suggested that the pottery was probably imported from some other people,† i.e., from a people outside Egypt. About one hundred and sixty of these vases have figures of boats drawn on their bowls; sometimes only one

‡ *A.Z.* XXXIX, p. 5, Abb. 4.

\* Petrie, *Naqada*, p. 40.

† *ibid.*, p. 40.

boat is figured on a vase, sometimes there are two, three, or even four boats depicted on the same vase. 'The great boats or galleys with long banks of oars show that the makers of these vases were not an inland people of the oases, but dwelt on some large river or sea.'‡ Often we see on them, and on other vases of the 'Decorated' class, one or more birds figured; these birds have been generally supposed to be ostriches, but the curved beak, which is very characteristic of them, shows that they really represent flamingoes (fig. 6). The flamingo is an extremely local bird; it

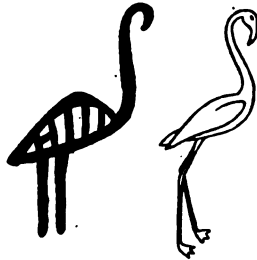


FIG. 6. The Flamingo. The figure on the left is from a Prehistoric Vase. seldom occurs in Upper Egypt, but is abundant in the region of the Delta Lakes. On these vases we also find depicted stretches of water and lines of pointed hills or sand-dunes, which suggest hilly or sandy country like that along the western and northern edges of the Delta. These three points indicate at once a country like Lower Egypt, and when we examine the cult-signs of the boats we see that these point Delta-wards also.

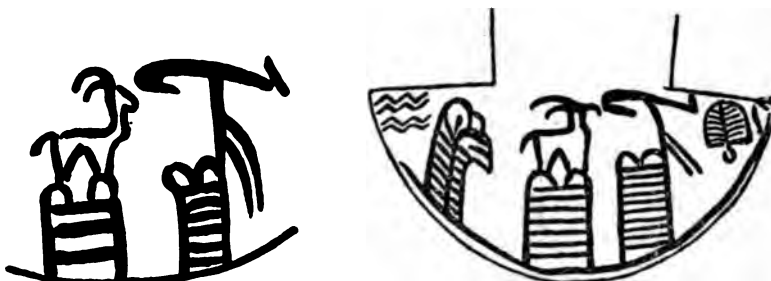
A list of all the cult-signs which appear on these vases is given on pp. 137-142. On the one hundred and fifty-nine that I have catalogued there are two hundred and eighty-eight figures of boats with cult-signs. Of these, one hundred and sixteen bear the 'Harpoon' ensign, sixty-six the 'Hill' ensign, and fourteen the 'Crossed Arrows' ensign. These cults all survive into historic times—the 'Harpoon' is the ensign of the Seventh Nome of Lower Egypt, the 'Hill' was the early ensign of the Sixth Nome, and the 'Crossed Arrows' was the ensign of the Fourth and Fifth Nome of Lower Egypt. Thus it will be seen that out of the two hundred and eighty-eight boats with cult-signs, no less than one hundred and ninety-six belong to the Western half of the Delta. Twenty-two boats bear the 'Tree' or 'Tree-branch' ensign, which, as I

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‡ *Ibid.*, p. 40.

have shown elsewhere,\* was the early cult-object of Heracleopolis. Nine boats bear the 'Thunderbolt' ensign of Ekhmim. The Falcon on a curved perch appears at the mast-head of three boats, and this ensign undoubtedly represents the later Falcon of Hieraconpolis. The Elephant, which is found on a single vase, was perhaps the cult-animal of the people of Elephantine.





Besides the cult-signs already mentioned, and which we can locate with comparative certainty, there are also a few others which, unfortunately, we cannot be so sure about. On one boat there is over the aft-cabin a 'Harpoon,' and over the fore-cabin a 'Goat'; these two are found again on a prehistoric dagger handle in the Cairo Museum (fig. 7). The Goat is shown standing on the top of



Cult signs on a Vase (MacGregor Coll.).

Cult Signs on Dagger Handle (Cairo Mus.).

FIG. 7

the fore-cabin, and may possibly represent a cult-animal: if this be so, then it is perhaps the Goat of Mendes. The 'Throwstick' as an ensign upon a pole appears on three boats; this cult-object reappears in historic times as the deity Methen, who is mentioned in the Pyramid Texts,† and whose name is again found in a few theophorous personal names on stelae of the late Middle Kingdom.‡ Four cult-signs I cannot trace into historic times. These are:— the  which occurs on thirty-six boats; the  which is found on eleven; the  on three; and the  on one. The latter ensign is certainly not the later *ka*, for no hands are indicated.

(To be continued.)

\* A.Z. XLIX.

† Ed. Sethe 952, and see also Spiegelberg, *Rec.* 16, 27.

‡ Cairo, *Cat. gen.* 20046, 20065, etc.

## LIST OF VASES WITH CULT-SIGNS

By PERCY E. NEWBERRY

The following Collections contain one or more of these Vases, and I should be grateful if any Collectors who own specimens not included in my list would send me particulars of them. For notes on the examples in the Metropolitan Museum of Art, New York, and in the Boston Museum, I am indebted to Mr. A. C. Mace; and for notes of those at Brussels, I have to thank Monsieur Capart. The specimens in other collections I have catalogued myself. The abbreviations are used to denote the various collections in my list of Cult-signs: the small figure placed after the Collection number (*e.g.*, Brist. 100<sup>3</sup>) signifies that the cult-sign is figured on the vase two <sup>2</sup> or three <sup>3</sup> times.

**Ashm.** = The Ashmolean Museum at Oxford.

**Behrens** = Randolph Behren's Collection at South Kensington.

**Berl.** = The Egyptian Museum at Berlin.

**Bootle** = The Museum at Bootle, Lancashire.

**Boston** = The Museum of Fine Arts, Boston, U.S.A.

**Brist.** = The Museum at Bristol.

**Brit.** = The British Museum.

**Brus.** = The Royal Museum, Brussels.

**Cairo** = The Cairo Museum.

**Dattari** = G. Dattari's Collection, Cairo.

**Edinb.** = The Archaeological Museum, Edinburgh.

**Guimet** = The Guimet Museum, Paris.

**Kelek** = D. Kelekian's Collection, Paris.

**L.** = The Egyptian Museum of the Louvre.

**L.-Smith** = Linton Smith's Collection, Blundellsands, Lancashire.

**Leyden** = The Leyden Museum.

**LIA.** = The Institute of Archaeology of the University of Liverpool.

**Lyons** = Palais des Arts, Lyons.

**Manc.** = The Manchester Museum.

**MG.** = W. MacGregor's Collection, Tamworth.

**MMA.** = Metropolitan Museum of Art, New York.

**Murch** = The Murch Collection (now at Chicago).

**Newb.** = P. E. Newberry's Collection, Liverpool.

**Petrie** = Flinders Petrie's Collection, University College, London.

**Rea** = James Rea's Collection, Eskdale, Cumberland.





Ashm. 1895/572<sup>a</sup>, 1895/605  
 Berl. 13051. 13823. 14166  
 14361. 14363<sup>a</sup>  
 Brist. 100<sup>a</sup>. 226<sup>a</sup>  
 Brit. A 16793<sup>a</sup>. 26636<sup>a</sup>  
 26657<sup>a</sup>. 36326  
 Brus. 1715 (= Naqada 852),  
 1931 (= Naqada 810)  
 Cairo. 11566. 11567<sup>a</sup>  
 Edinb. 590  
 Guimet. One  
 LIA. Three<sup>a</sup>  
 MG. 3370<sup>a</sup>  
 Manc. One<sup>a</sup> (= Naqada 562)  
 MMA. 07/228/134. Two  
 others<sup>a</sup>  
 Murch. One<sup>a</sup>  
 Newb. Three<sup>a</sup>  
 Petrie. One<sup>a</sup>  
 Cairo and Luxor Dealers.  
 Six<sup>a</sup>



Brist. 225  
 Cairo. One  
 LIA. One  
 MMA. 07/228/60 and another  
 Petrie. One  
 Rea. One  
 Luxor and Cairo Dealers.  
 Four



Berl. 14362  
 Cairo. 11569



Leyden A III. 82



Cairo Dealer. One



Brit. A. 36328.  
 MG. 3367  
 MMA. One



Brit. 36328  
 Petrie (= Naqada LXVII. 12  
 from Abydos)



Ashm. (= *Diospolis Parva*  
 XX. 11)  
 Boston. 99/712



*Diospolis Parva* XX. 9



Ashm. 1895/600/1209 (= *Naqada*  
 LXVII. 11).  
 Another *Naqada* LXVI. 7  
 Berl. 12 g 10

1  
 Bootle. One  
 Cairo. One  
 MG. 3369  
*Naqada* LXVII. 7  
 Newb. Two  
 Cairo and Luxor Dealers. Four



Ashm. 1895/595/1268 (= *Diospolis Parva*  
 XX. 1 & 2)

Manc. 5299 (Gerzeh)  
 MMA. 07/228/125  
 Cairo Dealers. Three



*Naqada* LXVI. 3



Dattari. One



Leyden. A. III. 69



Luxor Dealer. One



LIA. One



*Naqada* LXVI. 8









MG. 3493




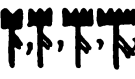





Behrens. One<sup>a</sup>  
 Brist. 88<sup>a</sup> (= *El Amrah* XIV.  
 D. 51) 104

	Edf.	Brit. 36327 <sup>a</sup> Cairo. One <sup>a</sup> Kelek. One <sup>a</sup> LIA. One <sup>a</sup> Manc. One <sup>a</sup> (= <i>Naqada</i> 1840) Petrie. One <sup>a</sup> Cairo and Luxor Dealers. Five <sup>a</sup>		Ashm. 1895/577/1873 (= <i>Naqada</i> LXVI. 10)
				LIA. One
				Petrie. One
				MMA. One
				Berl. $\frac{1024}{2}$
				LIA. One <sup>a</sup>
				Lyons <sup>a</sup>
				MMA. One <sup>a</sup>
				LIA. One
				Two
				One
				One
				Petrie (= <i>Naqada</i> LXVI. 9 from Abydos)
				<i>Naqada</i> LXVI. 9
				Petrie. One
				Berl. 13824. 13826 <sup>a</sup>
				Brist. 164
				Cairo. Three
				L-Smith. One
				Manc. 3755 <sup>a</sup> (Edfu)
				MMA. Two (one with <sup>a</sup> )
				Petrie. One
				Rea. One <sup>a</sup>

	Eleven		One
	Two		Four
	One		One
	One		One
	Ashm. 20/5/1891 Brist. One (El Amrah ?) Brit. 26635		One
	Berl. 13227		Three
	<i>Diospolis Parva</i> XX. 4 (= Brist. 164)		Newb. One
	MMA. 07/228/136 Petrie. Two (one with <sup>a</sup> ) L. One		One
	One		Berl. One Newb. One
	One		One
	One		One
	Berl. 14317 MMA. 07/228/126 <i>Naqada</i> LXVI. 6		One
	Cairo, One		Four
	None alone		None alone
	Six		One
	One		One
			Murch. One <sup>a</sup>

	One		Ashm. One <sup>s</sup> (= <i>Diospolis Parva</i> XVI 41)
	One		Newb. (Kostamneh).
	Ashm. 1895/684 <sup>s</sup> (= <i>Naqada</i> LXVII. 14)		One

Total number of Vases catalogued 159. Number of boats figured 288.

	Occurs alone on 38 Vases with 65 boats. with other cult-signs on 51. Total 116.
	alone on 22. with other cult-signs on 44. Total 66.
	alone on 6. with others on 8. Total 14.
	alone on 12. with others on 24. Total 36.
	alone on 4. with others on 8. Total 12.
	not found alone. with others on 22. Total 22.
	alone on 2. with others on 7. Total 9.

五子登科

**with others on 2. Total 3.**

**alone on 3. Total 3.**

with another on 1. Total 1.

with another on 1. Total 1.

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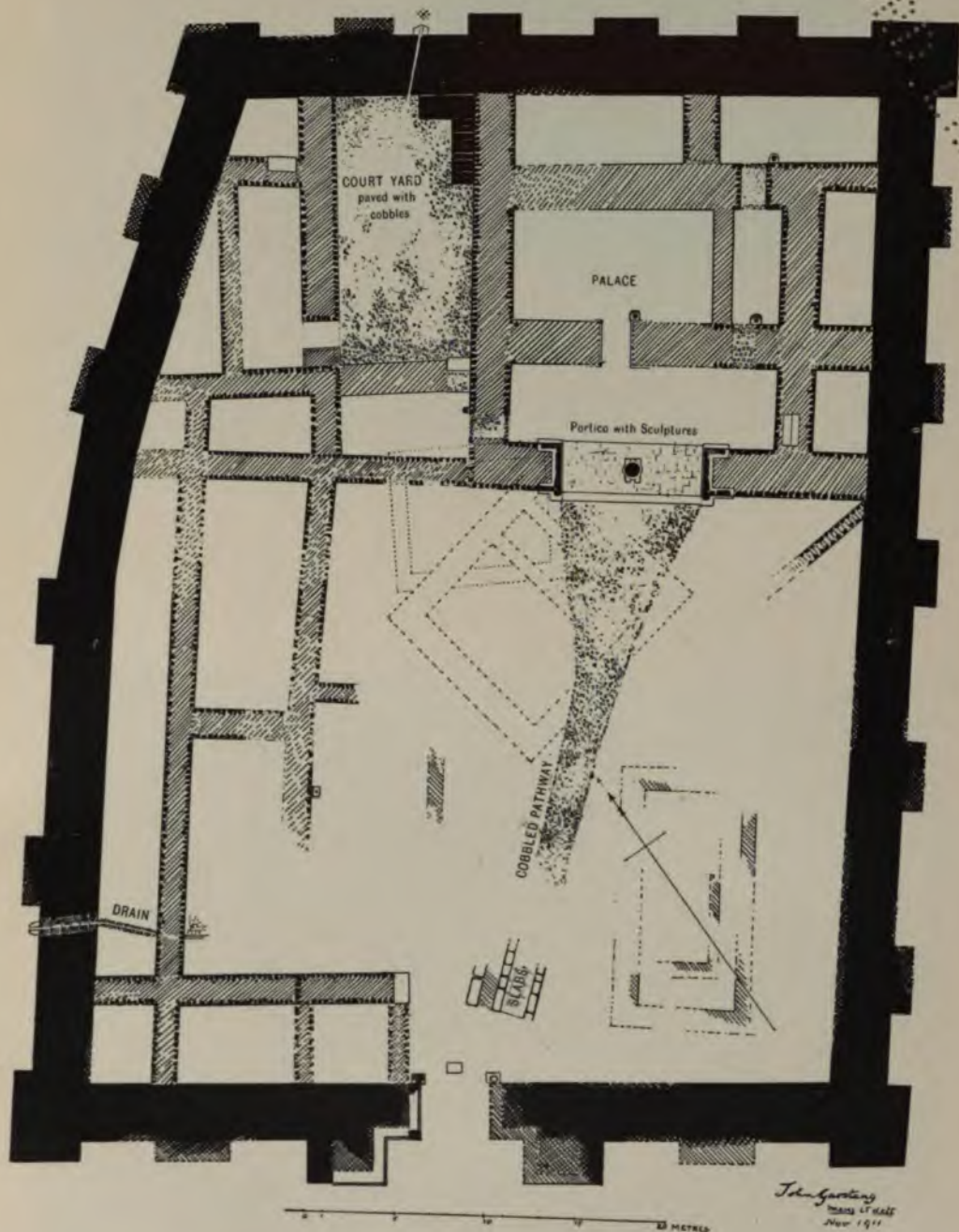


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SAKJE GEUZI: THE ROYAL CITY.



PLAN OF THE PALACE AND ENCLOSURE.





SAKJE-GEUZI: SONGRUS EYUK.



THE MOUND AT THE BEGINNING OF EXCAVATIONS, 1911.



NORTH END: SUPERPOSED WALLS AND POSTERN.

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SAKJE-GEUZI: JOBBA EYUK.



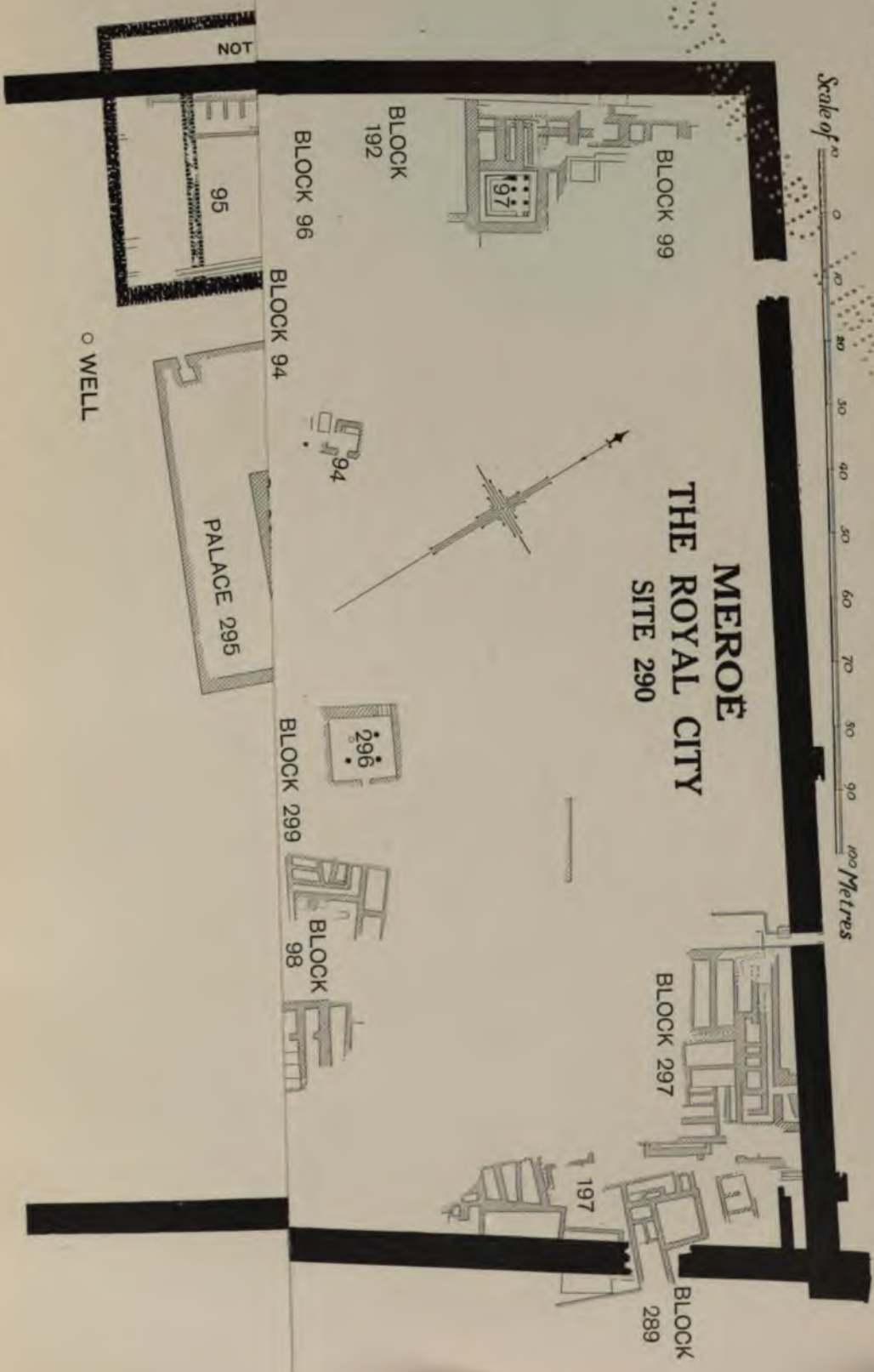
WEST SIDE OF THE MAIN GATEWAY, SHOWING CORNER-STONE AND SOCKET.



STEPS LEADING UP TO THE RAMPARTS FROM PALACE COURTYARD.



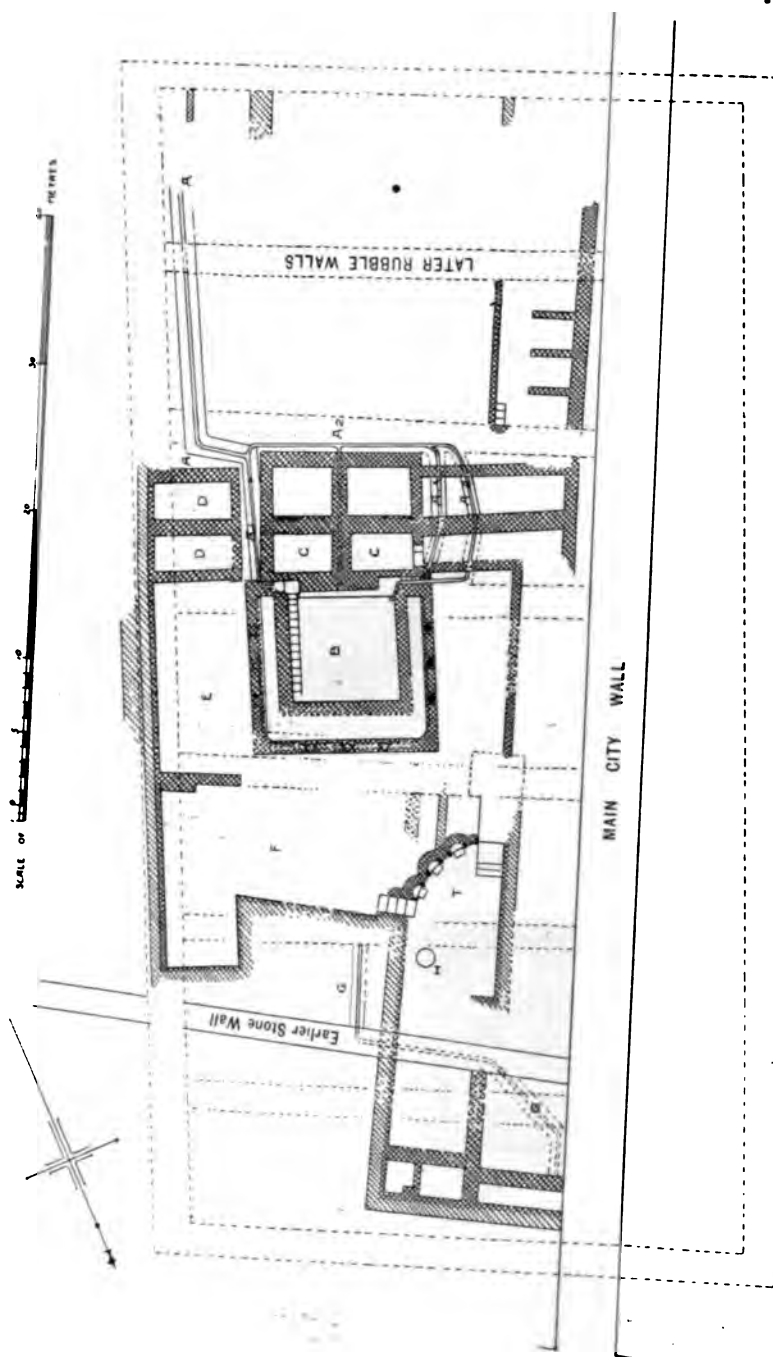




MEROË  
THE ROYAL CITY  
SITE 290

MEROË: THE ROYAL CITY AT THE END OF SEASON 1911-12.





MEROË: PLAN OF THE ROYAL BATHS, 1912.

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MEROË: THE ROYAL BATHS.



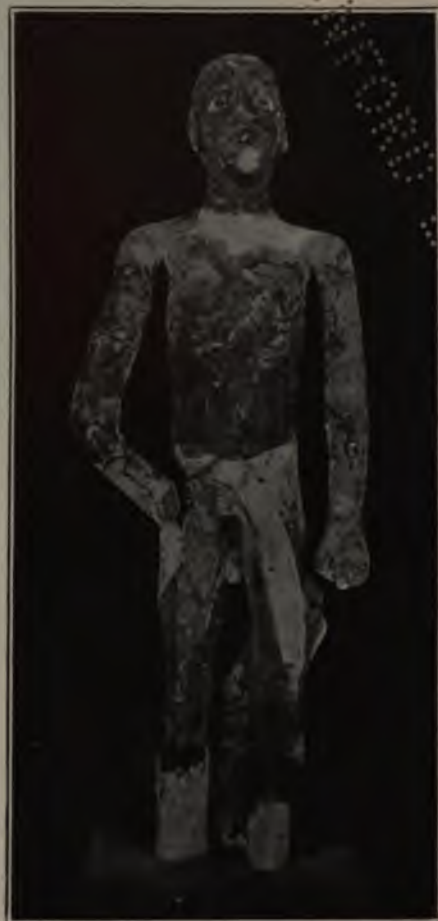
THE *TEPIDARIUM*, SHOWING THE SEATS.



THE SWIMMING AND SHOWER-BATH.

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MEROË: STATUES FROM THE BATHS.

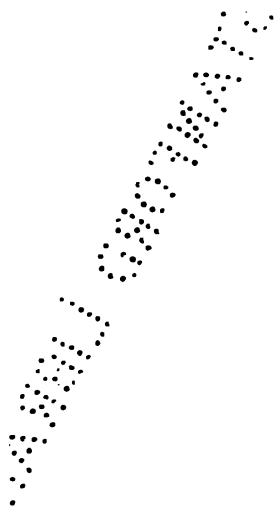


TWO FIGURES FROM A CORNER OF PALACE 295.



A MEROITIC VENUS.





MEROË CLASSICAL REMAINS, &c.



VIEW OF THE SMALL PROSTYLE TEMPLE.

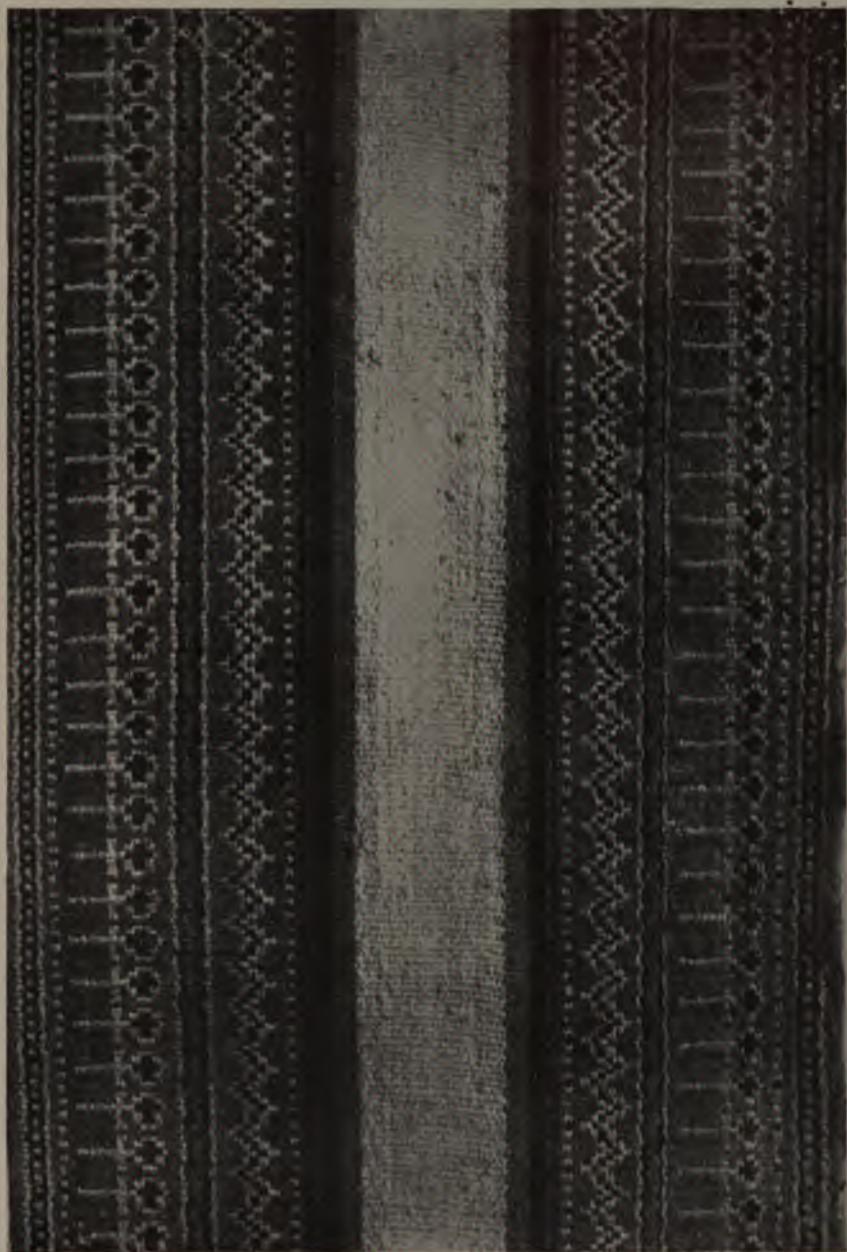


TORSO, PRESUMABLY OF AUGUSTUS.



VASE-STAND OF POTTERY,  
DESIGNED LIKE A PALM TREE.

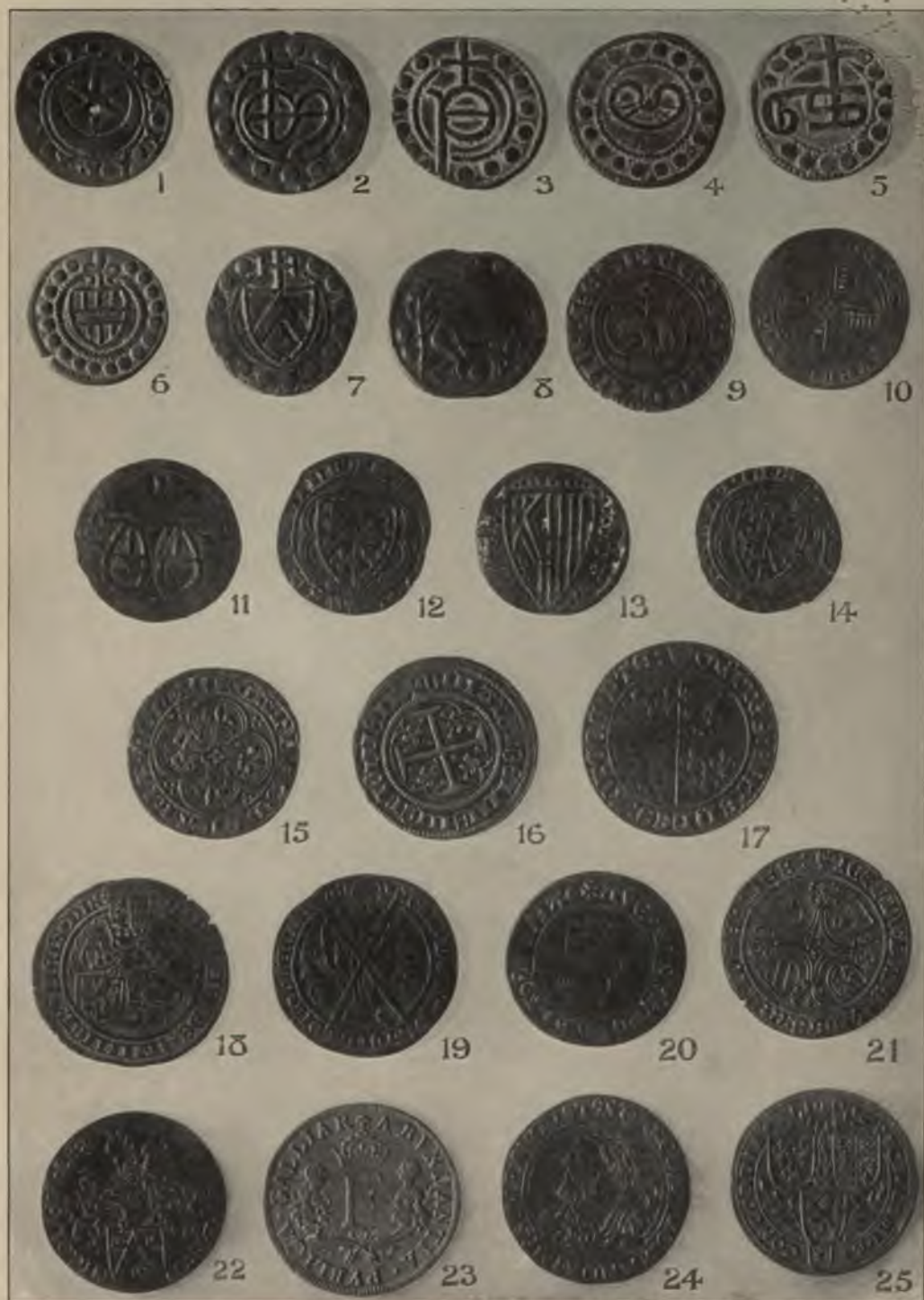




THE GIRDLE OF RAMESES III (Section actual size).

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JETTONS OR CASTING COUNTERS.

100

ABYDOS: EGYPT. MINOAN VASE.



VASE OF CRETAN FABRIC FROM AN EGYPTIAN TOMB.

*Height 13.50 cms. ; width 15 cms. ; projection of spout, 4 cms.*

The body colour is dull black. The lines are yellowish-white; the spots are of the same colour, on an orange band. The rosette is yellow-white with orange centre: the stars are orange on white. The inside is of reddish tinge, with a grey-black band around.

*Found in Tomb 416, Abydos, 1907, with the group shown on Pl. XIV.*



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ABYDOS: EGYPT.

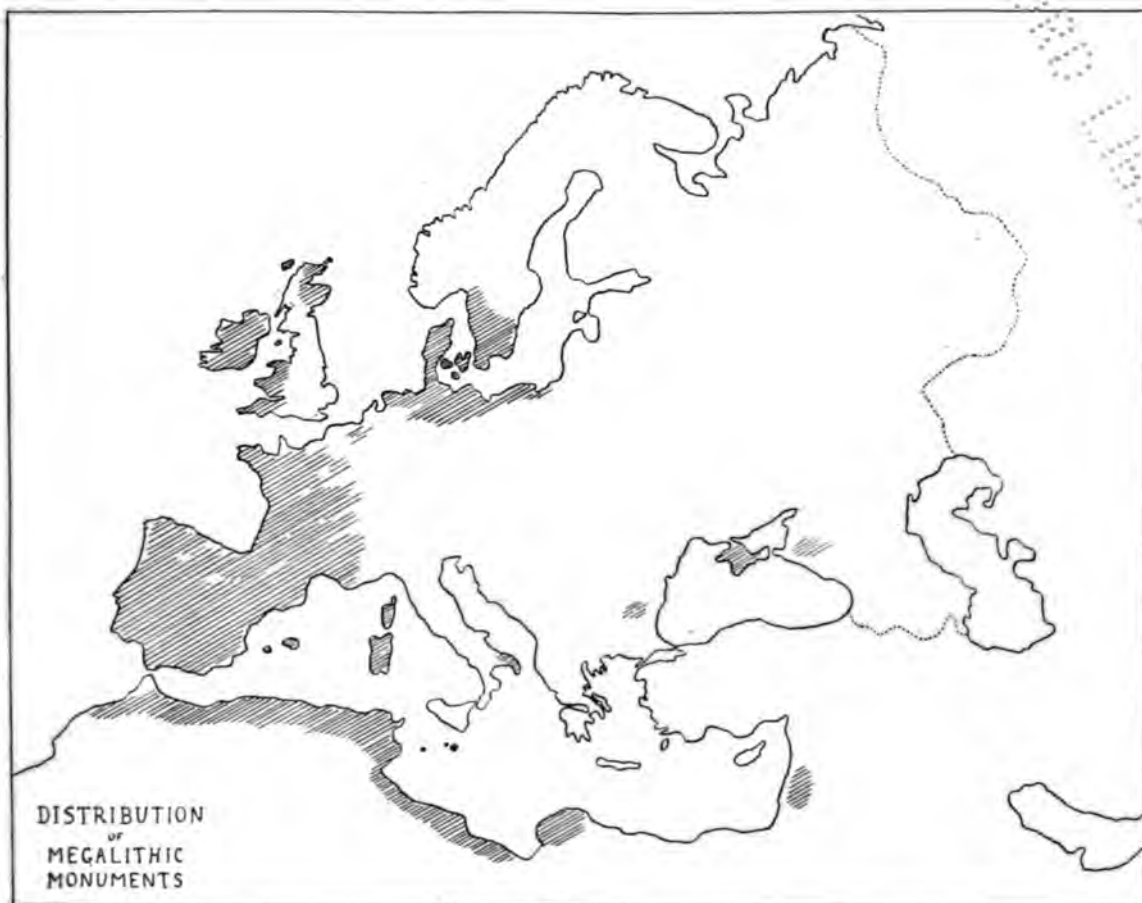


Tomb 416. A. 507.

SELECTED GROUP OF OBJECTS FROM THE TOMB DEPOSIT.  
(Now in the MacGregor Collection (Tunacorth) and the Ashmolean Museum.)

See p. 108.

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MAP TO SHOW THE DISTRIBUTION OF MEGALITHIC MONUMENTS IN  
EUROPE, AFRICA AND WESTERN ASIA.





A CYPRIOTE FIBULA OF THE EARLY IRON AGE.

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*Issued by  
The Liverpool  
Institute of Archaeology*



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# THEORY OF THE EARTH AND ITS HISTORY

BY J. H. MACLEOD, F.R.S.E., F.R.S.

THE THEORY OF THE EARTH AND ITS HISTORY, AS DEVELOPED BY THE STUDY OF THE GEOLOGICAL RECORD, AND THE PHYSICAL AND CHEMICAL PRINCIPLES OF GEOLGICAL HISTORY.

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## APPENDIX

The following table shows the results of the analysis of variance for the effect of the treatment on the response of the subjects to the test. The results are given in terms of the mean square values and the corresponding degrees of freedom.

The results of the analysis of variance for the effect of the treatment on the response of the subjects to the test are given in the following table.

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Source of Variation      Sum of Squares      D.F.      Mean Square

Treatment      1.2345      1      1.2345

Error      1.2345      10      0.1234

Total      2.4690      11      0.2245

The results of the analysis of variance for the effect of the treatment on the response of the subjects to the test are given in the following table.



# THE EFFECTS OF FLOODING

THE EFFECTS OF FLOODING ON THE GROWTH OF PLANTS

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THE EFFECTS OF FLOODING ON THE GROWTH OF PLANTS



THEORY OF THE EARTH AND ITS HISTORY  
CHAPTER IV

THEORY OF THE EARTH AND ITS HISTORY

The theory of the earth and its history is a branch of geology which deals with the origin and development of the earth and its various parts.

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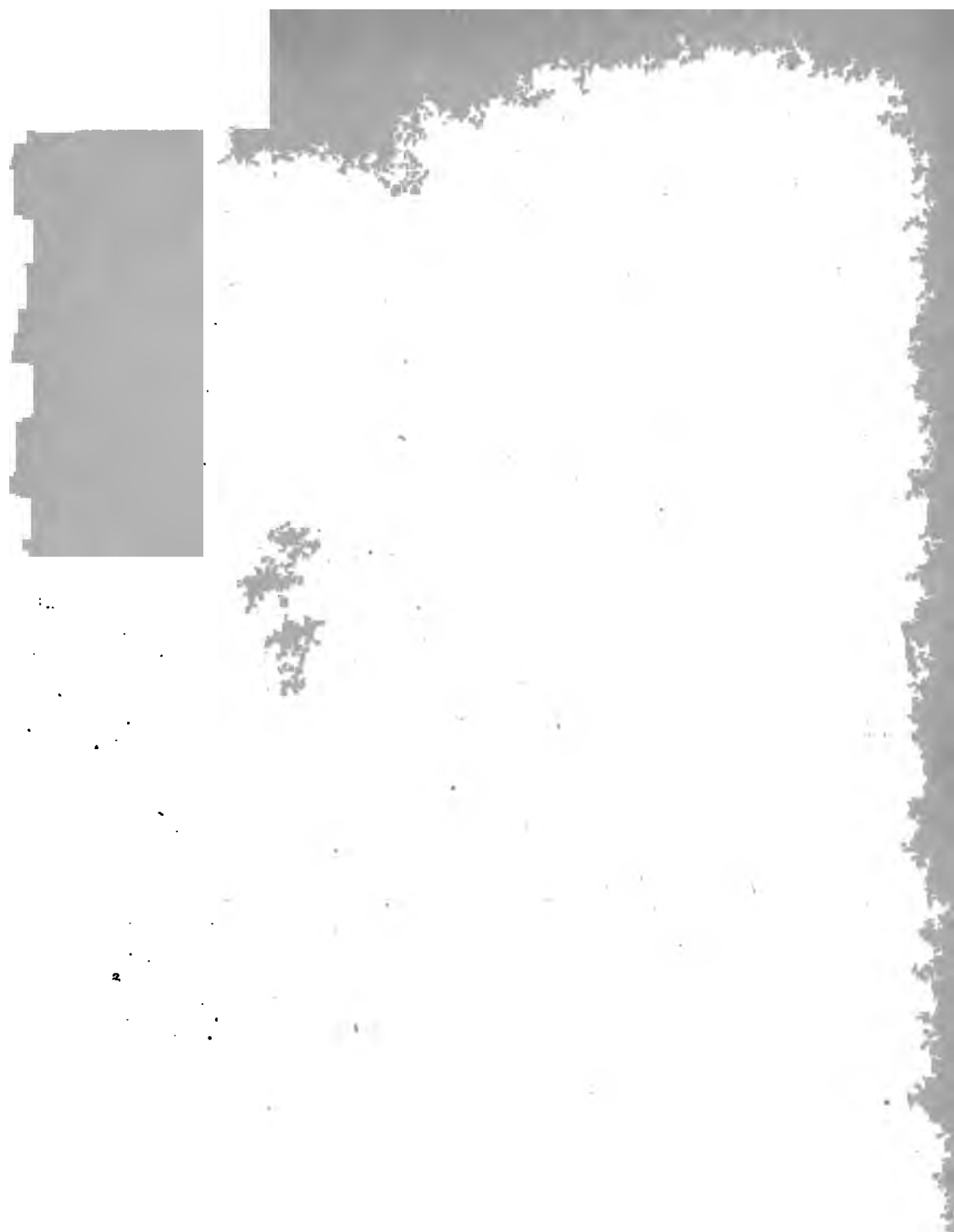
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